

EXHIBIT 3

PCA CASE NO. 2013-09

**IN THE MATTER OF AN ARBITRATION ARISING UNDER
THE AGREEMENT BETWEEN THE GOVERNMENT OF THE REPUBLIC OF
MAURITIUS AND THE GOVERNMENT OF THE REPUBLIC OF INDIA FOR THE
PROMOTION AND PROTECTION OF INVESTMENTS, SIGNED ON SEPTEMBER 4, 1998,
AND THE ARBITRATION RULES OF THE UNITED NATIONS COMMISSION ON
INTERNATIONAL TRADE LAW 1976**

-between-

**CC/DEVAS (MAURITIUS) LTD.,
DEVAS EMPLOYEES MAURITIUS PRIVATE LIMITED., and
TELCOM DEVAS MAURITIUS LIMITED.**

(the “Claimants”)

-and-

THE REPUBLIC OF INDIA

(the “Respondent” or “India,” and together with the Claimants, the “Parties”)

AWARD ON QUANTUM

October 13, 2020

Arbitral Tribunal

The Hon. Marc Lalonde, P.C., O.C., Q.C. (Presiding Arbitrator)
Mr. David R. Haigh, Q.C.
The Hon. Shri Justice Anil Dev Singh

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	THE PARTIES.....	1
B.	THE ESSENCE OF THE CLAIMANTS' CASE ON DAMAGES	1
C.	THE ESSENCE OF THE RESPONDENT'S CASE ON DAMAGES	3
II.	PROCEDURAL HISTORY	5
A.	COMMENCEMENT OF THE ARBITRATION.....	5
B.	AWARD ON JURISDICTION AND MERITS.....	6
C.	WRITTEN PROCEEDINGS ON DAMAGES.....	7
D.	HEARING ON DAMAGES	17
E.	POST-HEARING PROCEEDINGS.....	20
III.	THE PARTIES' REQUESTS	24
A.	THE CLAIMANTS' REQUESTS	24
B.	THE RESPONDENT'S REQUESTS	26
IV.	LEGAL STANDARD OF REPARATION	26
A.	THE CLAIMANTS' POSITION	27
B.	THE RESPONDENT'S POSITION	29
C.	THE TRIBUNAL'S ANALYSIS	31
V.	APPLICABLE "BUT FOR" SCENARIO	35
A.	REDUCED SPECTRUM SCENARIO	36
1.	Spectrum Entitlement and Division	36
a.	Contiguous 25.2 MHz Spectrum Allocation to Devas in One Satellite.....	36
b.	Non-contiguous 19.44 MHz Spectrum Allocation to Devas Divided in Both Satellites ...	38
2.	Technical Risks	39
a.	Satellite Configuration and Launch Delays	39
i.	One Dedicated Satellite for Devas Unimpeded by Delays	39
ii.	Shared Satellites to Be Launched with Indian Autochthonous Technology.....	41
iii.	One Satellite Dedicated to Devas Still Affected by Launch Delays.....	44
b.	Technical Challenges.....	44
i.	Novel Technologies (LTE, DVB-SH and eMBMS).....	44
ii.	Download Speed.....	46
iii.	"Oversubscription Ratio".....	47
3.	Regulatory Risks	49
a.	Obtainment of WPC License for Terrestrial Re-use of Spectrum	49
b.	Unlikelihood of Award of Terrestrial Re-use License.....	54
4.	Applicable License Fees.....	58
a.	Establishment of a "Reasonable" Fee.....	58
b.	India's Level Playing Field Policy.....	61
5.	Viability of an "AV Services-Only Business" in the Reduced Spectrum Scenario	63
B.	ORIGINAL SPECTRUM SCENARIO.....	65
1.	Spectrum Entitlement and Division	66

2. Technical Risks	67
a. Technology in Devas' Business Plan.....	67
b. Satellite Launch Dates	68
3. Regulatory Risks	69
4. Applicable License Fees.....	70
5. Viability of an "AV Services-Only Business" in the Original Spectrum Scenario.....	71
C. THE TRIBUNAL'S ANALYSIS	73
1. Spectrum Entitlement and Division	73
2. Technical Risks	73
a. Evolution of the Business Environment Between 2009 and 2011	74
i. Positive Market Development after 2008/2009	75
ii. Corresponding New Challenges to Devas' Technology Model	77
iii. Conclusion.....	78
b. Satellite Launch Dates	79
3. Regulatory Risks	79
4. Applicable License Fees.....	81
VI. AMOUNT OF COMPENSATION DUE	82
A. WHETHER DEVAS, IN ITS OWN BUSINESS MODELS, EXPRESSED CASH FLOWS IN REAL OR NOMINAL TERMS	83
1. The Claimants' Position	83
2. The Respondent's Position	86
3. The Tribunal's Analysis	87
B. VALUATION METHODOLOGY	93
1. The Claimants' Position	93
a. Methodology as Developed in relation to the Reduced Spectrum Case	93
b. Methodology as Applied to the Original Spectrum Case	97
2. Respondent's Position.....	100
a. Methodology as Developed in relation to the Reduced Spectrum Case	100
b. Methodology as Applied to the Original Spectrum Case	102
C. QUANTIFICATION.....	104
1. The Claimants' Position	104
a. Reduced Spectrum Scenario	104
b. Original Spectrum Scenario	108
2. The Respondent's Position	110
a. Reduced Spectrum Scenario	111
b. Original Spectrum Scenario	116
D. THE TRIBUNAL'S ANALYSIS	118
1. Introduction of Tribunal's Analysis of Quantum	118
2. The DCF or Cash Method for Valuation	119
3. Compensation Due to the Claimants.....	150
VII. INTEREST	150
A. THE CLAIMANTS' POSITION	151
B. THE RESPONDENT'S POSITION	152
C. THE TRIBUNAL'S ANALYSIS	153

VIII.	COSTS	153
A.	COSTS OF ARBITRATION	153
B.	ALLOCATION OF COSTS.....	154
1.	The Claimants' Position	154
2.	The Respondent's Position	156
3.	The Tribunal's Analysis	158
IX.	DISPOSITIF	160

LIST OF DEFINED TERMS

Antrix	Antrix Corporation Ltd, an Indian corporation wholly owned by the Government of India that is under the administrative control of DOS and purports to operate as the commercial marketing arm of ISRO and DOS. Antrix was created to promote the commercial exploitation of India's space program.
AV	Audio-video.
Award on Jurisdiction and Merits or Partial Award	Award on Jurisdiction and Merits issued by the Tribunal on July 25, 2016.
Bazelon I	Expert Report of Mr. Coleman Bazelon, dated January 16, 2017.
Bazelon II	Reply Expert Report of Mr. Coleman Bazelon, dated July 31, 2017.
Bazelon III	Third Expert Report of Mr. Coleman Bazelon dated November 29, 2017.
Bazelon IV	Fourth Expert Report of Mr. Coleman Bazelon, dated April 26, 2018.
Bhagirath I	Direct Testimony of Mr. M. Bhagirath, dated May 15, 2017.
Bhagirath II	Supplemental Direct Testimony of Mr. M. Bhagirath, dated 19 October 2017.
BIT(s)	Bilateral investment treaty (or treaties).
BLS	U.S. Bureau of Labor Statistics.
Build-Out Requirement	Assumed obligation to provide services in the prescribed coverage areas.
BWA	Broadband wireless access.
CAPM	Capital Asset Pricing Model.
CC/Devas	CC/Devas (Mauritius) Ltd., the first Claimant, which was formed in 2006 and has its registered office in Port Louis, Mauritius. It is affiliated with Columbia Capital LLC, a venture capital firm based in Alexandria, Virginia, USA. Shareholder of Devas.
CCS	The Indian Cabinet Committee on Security, a select Cabinet committee that, among other matters, deals with all defence related issues, issues relating to law and order, and internal security and economic and political issues impinging on national security. It is composed of the Prime Minister, the Minister of Home Affairs, the Minister of External Affairs, the Minister of Finance, and the Minister of Defence.
CGC	Complementary Ground Components, which would constitute the terrestrial segment of the hybrid communication system planned by Devas. Also referred to as ATC (Ancillary Terrestrial Components).

Claimants' Comments on Alternative Valuation Calculations	Claimants' Comments on Alternative Valuation Calculations and Response to New Points and Authorities Raised for the First Time in Rejoinder, dated April 26, 2018.
Claimants' Comments on Respondent's May 8, 2020 Costs Submission	Claimants' Comments on Respondent's May 8, 2020 Costs Submission, submitted on May 22, 2020.
Claimants' Reply on Quantum	Claimants' Reply on Quantum, submitted on July 31, 2017.
Claimants' Submission on Fees and Costs	Claimants' Submission on Fees and Costs, submitted on May 8, 2020.
Claimants' Submission on Quantum	Claimants' Submission on Quantum, submitted on January 16, 2017.
DCF	Discounted Cash Flow.
DEMPL	Devas Employees Mauritius Private Limited, the second Claimant, which was formed in 2009 and has its registered office in Port Louis, Mauritius. It is a subsidiary of Devas Employees Fund US, LLC, a Delaware limited liability company with membership units owned by certain non-Indian Devas employees pursuant to an Equity Incentive Plan. Shareholder of Devas.
Devas	Devas Multimedia Private Limited, an Indian company incorporated in Karnataka, Bangalore, India on December 17, 2004, with its registered office at 2nd Floor, Prema Gardenia, 357/6, 1st Cross, I Block, Jayanagar, Bangalore, India. The three Claimants hold shares in Devas and made their alleged investments in India through this company.
Devas Agreement	Agreement for the Lease of Space Segment Capacity on ISRO/ANTRIX S-band Spacecraft between Antrix Corp. Ltd. and Devas Multimedia Private Ltd. (Agreement No. ANTX/203/DEVAS/2005), dated January 28, 2005.
DOS	The Indian Department of Space, the government department responsible for the development of India's space policy and the implementation of the decisions of the Space Commission. Since its establishment in 1972 under Prime Minister Indira Gandhi, DOS has formed part of the Prime Minister's portfolio and has reported to the PMO.
DOT	The Indian Department of Telecommunications.
DT	Group of companies including Deutsche Telekom AG and any affiliate companies.
DT Asia	Deutsche Telekom Asia, shareholder of Devas and a subsidiary of Deutsche Telekom AG.
DT Arbitration	<i>Deutsche Telekom AG v. Republic of India</i> , PCA Case No. 2014-10.

DT Award	Interim Award on jurisdiction and merits issued on December 13, 2017, in the case of <i>Deutsche Telekom AG v. the Republic of India</i> .
ERP	Market equity-risk premium.
FET	Fair and Equitable Treatment.
Flores I	Expert Report of Mr. Daniel Flores of Econ One Research, dated May 15, 2017.
Flores II	Second Expert Report of Mr. Daniel Flores of Econ One Research, dated October 20, 2017.
Flores III	Supplemental Expert Report of Econ One Research, Inc. prepared by Mr. Daniel Flores on November 29, 2017.
Flores IV	Second Supplemental Expert Report of Econ One Research, Inc. prepared by Mr. Daniel Flores, dated April 26, 2018.
FMV	Fair market value.
GSLV	Geosynchronous Satellite Launch Vehicle.
Hearing on Quantum	Hearing on Damages held in The Hague, The Netherlands, from July 16 through and including July 21, 2018.
ICC	International Chamber of Commerce.
ICC Arbitration	Arbitration under the rules of the International Chamber of Commerce captioned <i>Devas Multimedia (Private) Limited v. Antrix Corp. Ltd.</i> (No. 18051/CYK).
ICC Award	<i>Devas Multimedia Private Limited v. Antrix Corporation Limited</i> , ICC Case No. 18051/CYK, Final Award, September 14, 2015.
ICC Tribunal	Tribunal in the ICC Arbitration.
ILC Articles	International Law Commission, Articles on Responsibility of States for Internationally Wrongful Acts 2001, Yearbook of the International Law Commission (2001), Vol. II, Part Two.
IPTV	Internet Protocol Television.
ISP	Internet Service Provider.
ISRO	The Indian Space Research Organization, a body of the Government of India under the direction of DOS and the Space Commission that engages in research and testing in order to encourage the rapid development of activities connected with space science, space technology and space applications with responsibility in the entire field of science and technology of outer space. ISRO builds, launches, operates and leases satellites for various uses, including telecommunications, television and radio broadcasting.

Jain I	Direct Testimony of Mr. Nitin Jain, dated May 15, 2017.
Jain II	Supplemental Direct Testimony of Mr. Nitin Jain, dated 19 October 2017.
Larsen I	Witness Statement of Mr. Kim Kylesbech Larsen, dated January 13, 2017.
Larsen II	Reply Witness Statement of Mr. Kim Kylesbech Larsen, dated 28 July 2017.
MFN	Most Favored Nation.
MHz	Megahertz.
Original Spectrum Scenario	Alternative valuation approach, calculating 40% of the value of the investment as it was actually made by the Claimants, <i>i.e.</i> in consideration of all rights and obligations set out in the Devas Agreement, including access to 63 Mhz of S-band spectrum.
Parikh I	Direct Testimony of Mr. K. S. Parikh, dated May 15, 2017.
Parikh II	Supplemental Direct Testimony of Mr. K. S. Parikh, dated October 19, 2017.
Parsons III	Third Witness Statement of Mr. Gary Parsons, dated January 13, 2017.
Parsons IV	Fourth Witness Statement of Mr. Gary Parsons, dated July 31, 2017.
Pre-Revenue Adjustment or PRA	Pre-revenue adjustment to the cash flows.
Reduced Spectrum Scenario	Valuation of an investment that the Claimants might have made, had they been able to secure only 25.2 Mhz of spectrum.
Renegotiation Risk	Risk that the Indian government would not have renewed the Devas Agreement on commercially viable terms upon expiry of its two twelve-year terms.
Respondent's Comments on Claimants' Submission on Costs	Respondent's Comments on Claimants' Submission on Costs, submitted on May 22, 2020.
Respondent's Counter-Memorial on Quantum	Respondent's Counter-Memorial on Quantum, submitted on May 15, 2017.
Respondent's Cost Submission	Respondent's Cost Submission, submitted on May 8, 2020.
Respondent's Rejoinder	Respondent's Rejoinder, submitted on July 1, 2014.
Respondent's Rejoinder on Quantum	Respondent's Rejoinder on Quantum, submitted on October 20, 2017.

Respondent's Submission of April 26, 2018	Respondent's letter of April 26, 2018, where, <i>inter alia</i> , the Respondent provided supplemental comments on alternate calculation.
Revathi I	Direct Testimony of Smt. M. Revathi, dated May 15, 2017.
Revathi II	Supplemental Direct Testimony of Smt. M. Revathi, dated October 19, 2017.
Sacks I	Expert Report of Mr. Benjamin Sacks, dated January 16, 2017.
Sacks II	Reply Expert Report of Mr. Benjamin Sacks, dated July 31, 2017.
Sacks III	Third Expert Report by Mr. Benjamin Sacks dated November 29, 2017.
Sacks IV	Fourth Expert Report of Mr. Benjamin Sacks, dated April 26, 2018.
Sethuraman I	Direct Testimony of Mr. K. Sethuraman, dated December 2, 2013.
Sethuraman II	Supplemental Direct Testimony of Mr. K. Sethuraman, dated June 30, 2014.
Sethuraman III	Second Supplemental Direct Testimony of Mr. K. Sethuraman, dated May 15, 2017.
Sethuraman IV	Third Supplemental Direct Testimony of Mr. K. Sethuraman, dated October 19, 2017.
Sharony I	Technical Report of Mr. Jacob Sharony, dated May 15, 2017.
Sharony II	Second Technical Report of Mr. Jacob Sharony, dated October 20, 2017.
Statement of Claim	Claimants' Statement of Claim, submitted on July 1, 2013.
Statement of Defence	Respondent's Statement of Defence, submitted on December 2, 2013.
Statement of Reply	Claimants' Statement of Reply on Jurisdiction and Liability, submitted on March 18, 2014.
Telcom Devas	Telcom Devas Mauritius Limited, the third Claimant, which was formed in 2006 and has its registered office in Port Louis, Mauritius. It is affiliated with Telcom Ventures LLC, a United States venture capital firm owned by Dr. Rajendra Singh. Shareholder of Devas.
TRAI	Telecom Regulatory Authority of India.
Treaty or Mauritius-India Treaty	Agreement Between The Government of The Republic of Mauritius and The Government of The Republic of India for the Promotion and Protection of Investments, signed on September 4, 1998 and entering into force on June 20, 2000.
UNCITRAL Rules	The Arbitration Rules of the United Nations Commission on International Trade Law 1976.

Viswanathan I	First Witness Statement of Mr. Ramachandran Viswanathan, dated June 29, 2013.
Viswanathan IV	Fourth Witness Statement of Mr. Ramachandran Viswanathan, dated June 26, 2018.
WPC	Wireless Planning and Coordination Wing, an organ of DOT.
WPC License	Operating license issued by the WPC to operators of terrestrial electromagnetic spectrum.

DRAMATIS PERSONAE

Anand, Mr. A. Vijay	<p>Joint Secretary of Department of Space and Chief Vigilance Officer beginning July 2009 (subsequently became Additional Secretary of Department of Space).</p> <p><i>Has submitted witness statements in support of Respondent's Statement of Defence and Respondent's Counter-Memorial on Quantum.</i></p>
Bazon, Mr. Coleman	<p>Principal at The Brattle Group.</p> <p><i>Has submitted expert reports in support of Claimants' Submission on Quantum and Claimants' Reply on Quantum, as well as a third and fourth expert reports pursuant to the Tribunal's request of November 13, 2017.</i></p>
Bhagirth, Mr. M.	<p>Senior Deputy Wireless Advisor to the Government of India in the Wireless Planning & Coordination Wing.</p> <p><i>Has submitted witness statements in support of Respondent's Counter-Memorial on Quantum and Respondent's Rejoinder on Quantum.</i></p>
Flores, Mr. Daniel	<p>Managing Director of Econ One Research Inc.</p> <p><i>Has submitted expert reports in support of Respondent's Counter-Memorial on Quantum and Respondent's Rejoinder on Quantum, as well as two supplemental expert reports pursuant to the Tribunal's request of November 13, 2017.</i></p>
Jain, Mr. Nitin	<p>Deputy Director General in the Data Services Wing of the Department of Telecommunications.</p> <p><i>Has submitted witness statements in support of Respondent's Counter-Memorial on Quantum and Respondent's Rejoinder on Quantum.</i></p>
Kim, Mr. Larsen	<p>Senior Vice President within the Group Technology Department of DT in Bonn office (Germany).</p> <p><i>Has submitted witness statements in support of Claimants' Submission on Quantum and Claimants' Reply on Quantum.</i></p>
Parikh, Mr. K. S.	<p>Deputy Director of the Satellite Communication and Navigation Payload Area of the Space Application Center, Ahmedabad, ISRO.</p> <p><i>Has submitted witness statements in support of Respondent's Counter-Memorial on Quantum and Respondent's Rejoinder on Quantum.</i></p>
Parsons, Mr. Gary	<p>Founder of SkyTerra LP and XM Satellite Radio Holdings, Inc. Former CEO and President of American Mobile Satellite Corporation, which had a number of subsidiaries, including TerreStar Networks, Inc.. Devas board member from September 2007 and shareholder in Devas.</p> <p><i>Has submitted witness statements in support of Claimants' Statement of Claim, Claimants' Statement of Reply, Claimants' Submission on Quantum and Claimants' Reply on Quantum.</i></p>

Revathi, Smt. M	<p>Senior Deputy Wireless Advisor in the Wireless Planning & Coordination Wing of the DOT.</p> <p><i>Has submitted witness statements in support of Respondent's Counter-Memorial on Quantum and Respondent's Rejoinder on Quantum.</i></p>
Sacks, Mr. Benjamin	<p>Principal at The Brattle Group.</p> <p><i>Has submitted expert reports in support of Claimants' Submission on Quantum and Claimants' Reply on Quantum, as well as a third and fourth expert reports pursuant to the Tribunal's request of November 13, 2017.</i></p>
Sethuraman, Mr. K.	<p>Associate Director, Satellite Communication Program at the Satellite Communication and Navigation Program Office, ISRO (from April 6, 2009).</p> <p><i>Has submitted witness statements in support of Respondent's Statement of Defence, Respondent's Rejoinder, Respondent's Counter-Memorial on Quantum and Respondent's Rejoinder on Quantum.</i></p>
Sharony, Mr. Jacob	<p>Principal Consultant at Mobius Consulting.</p> <p><i>Has submitted technical reports in support of Respondent's Counter-Memorial on Quantum and Respondent's Rejoinder on Quantum.</i></p>
Viswanathan, Mr. Ramachandran	<p>CEO of Devas.</p> <p><i>Has submitted witness statements in support of Claimants' Statement of Claim, Claimants' Statement of Reply and Claimants' Reply on Quantum.</i></p>

I. INTRODUCTION

A. THE PARTIES

1. The Claimants in this arbitration are CC/Devas (Mauritius) Ltd. (“**CC/Devas**”), Devas Employees Mauritius Private Limited (“**DEMPL**”) and Telcom Devas Mauritius Limited (“**Telcom Devas**”), each incorporated in Mauritius. The Claimants bring their claims under the Agreement between the Government of the Republic of Mauritius and the Government of the Republic of India for the Promotion and Protection of Investments entering into force June 20, 2000.
2. The Claimants are represented in this arbitration by Mr. John L. Gardiner, Mr. Timothy G. Nelson, and Ms. Betsy A. Hellmann, of Skadden, Arps, Slate, Meagher & Flom LLP, One Manhattan West, New York, NY 10001-8602, United States of America, and by Mr. David Kavanagh, of Skadden, Arps, Slate, Meagher & Flom LLP, 40 Bank Street, Canary Wharf, London E14 5DS, United Kingdom.
3. The Respondent in this matter is the Republic of India.
4. The Respondent is represented in this arbitration by Mr. George Kahale III and Mr. Benard V. Preziosi, Jr., of Curtis, Mallet-Prevost, Colt & Mosle LLP, 101 Park Avenue, 35th Floor, New York, New York 10178, United States of America.

B. THE ESSENCE OF THE CLAIMANTS’ CASE ON DAMAGES

5. The Claimants assert that “the only remaining issue in this case is the amount of compensation that the Claimants are entitled to receive from the Respondent arising out of the Respondent’s multiple treaty violations, as set out in the Tribunal’s July 25, 2016, Award.”¹
6. The Claimants contend that the determination of compensation due is governed by the principles put forward by the Permanent Court of International Justice in the *Chorzów Factory* case, and that compensation should restore them to the situation which would have existed if the unlawful acts had not been committed.²
7. The Claimants recall that the Tribunal held in the Award on Jurisdiction and Merits “that the protection of essential security interests accounts for 60% of the Respondent’s decision to annul

¹ Claimants’ Submission on Quantum ¶ 1.

² Claimants’ Submission on Quantum ¶ 2; Claimants’ Reply on Quantum ¶ 4.

the Devas agreement, and that the compensation owed by the Respondent to the Claimants for the expropriation of their investment shall therefore be limited to 40% of the value of that investment.”³ Accordingly, the Claimants primarily calculate their compensation claims on the basis of 25.2 Megahertz (“**MHzs**”) of available spectrum (which corresponds to 40% of the 63 MHzs of initially envisaged available spectrum).⁴ In other words, they present the valuation of an investment that the Claimants might have made, had they been able to secure only 25.2 Mhz of spectrum (“**Reduced Spectrum Scenario**”).

8. In a Reduced Spectrum Scenario, the Claimants contend that Devas Multimedia Private Ltd. (“**Devas**”) would have made use of only one satellite and worked with new technology for its ground network to maximally use the limited available spectrum. They argue that with these changes Devas would still have been able to deliver the same broadband wireless access (“**BWA**”) and audio-video (“**AV**”) services in the urban areas from which most of its revenue is originated.⁵
9. The Claimants criticize as “hopelessly implausible, and, indeed, mak[ing] sense only if one were deliberately seeking to undermine Devas’s value”⁶ the Respondent’s contentions that in a “but for” world the Respondent’s military would have commandeered both satellites and would have interleaved its 60% of appropriated spectrum with Devas’ spectrum across each of the transponders, so that both sides’ spectrum would have been divided in small slices.⁷
10. The Claimants’ experts, Mr. Benjamin Sacks and Mr. Coleman Bazelon, Principals of The Brattle Group (“**Mr. Sacks**” and “**Mr. Bazelon**,” respectively), apply the Income and Market approaches to determine the fair market value of Devas as of a valuation date of February 17, 2011—the day on which the Agreement for the Lease of Space Segment Capacity on ISRO/ANTRIX S-band Spacecraft between Antrix Corporation Ltd. (“**Antrix**”) and Devas (“**Devas Agreement**”) was annulled.⁸
11. Pursuant to the Tribunal’s request of November 13, 2017, they also address an alternative valuation approach, calculating 40% of the value of the investment as it was actually made by the

³ Claimants’ Submission on Quantum ¶ 7.

⁴ Claimants’ Submission on Quantum ¶ 8.

⁵ Claimants’ Submission on Quantum ¶ 8; Claimants’ Reply on Quantum ¶ 6.

⁶ Claimants’ Reply on Quantum ¶ 13.

⁷ Claimants’ Reply on Quantum ¶ 11.

⁸ Claimants’ Submission on Quantum ¶ 10.

Claimants, *i.e.* in consideration of all rights and obligations set out in the Devas Agreement, including access to 63 Mhz of S-band spectrum (“**Original Spectrum Scenario**”).

C. THE ESSENCE OF THE RESPONDENT’S CASE ON DAMAGES

12. The Respondent asserts that the Claimants’ calculation of Devas business’ fair market value bears no relationship to reality.⁹
13. The Respondent criticizes that the Claimants purport to obtain in this case a value which is almost identical, despite relevant differences, to the value put forward in a parallel arbitration conducted before the International Court of Arbitration of the International Chamber of Commerce (“**ICC**” and “**ICC Arbitration**,” respectively), in which a final award was issued in 2016. In the present case, the Respondent recalls, the Claimants have assumed the use by Devas of only 40% of the spectrum that was assumed to be available in the ICC Arbitration and the payment of a fee for terrestrial use of spectrum which is twelve times the amount used in the ICC Arbitration.¹⁰ The Respondent contends that the Claimants obtain essentially the same value for Devas’ business, despite the spectrum reduction and the payment of a much higher re-use fee, by manipulating projected cash flows to match a target value.¹¹
14. Furthermore, the Respondent argues that, as is reflected in contemporaneous documentary evidence and the testimony of Government officials, it is stated Indian policy to charge a fee for the use of spectrum which is commensurate with the spectrum’s auction value.¹² The application of the auction price as re-use fee would suffice to cause Devas’ business to have a negative value of USD 549 million, even without any other adjustment to the Claimants’ model.¹³

⁹ Respondent’s Counter-Memorial on Quantum ¶ 5.

¹⁰ Respondent’s Counter-Memorial on Quantum ¶ 5.

¹¹ Respondent’s Counter-Memorial on Quantum ¶ 6. See also Hearing Transcript, Day 1, pp. 96:9-97:10; pp. 111:21-112:7; pp. 113:1-115:12.

¹² Respondent’s Counter-Memorial on Quantum ¶ 7; Respondent Rejoinder on Quantum ¶ 5. See also Expert Report of Dr. Daniel Flores of Econ One Research, dated May 15, 2017 (hereinafter, “**Flores I**”), Table 6; Ex. **R-138** Letter from the Department of Telecommunications to the Department of Space (July 6, 2010) [Note of the Tribunal: the document bears the date “06.07.2007,” which the Parties agree must be erroneous], and Ex. **R-139**, Letter from the Department of Telecommunications to the Department of Space (July 28, 2010).

¹³ Respondent’s Counter-Memorial on Quantum ¶ 7.

15. The Respondent disagrees with the relevance for the present case of the test set out in the *Chorzów Factory* judgment, as it considers that the Tribunal held that the Claimants are entitled to compensation under Article 6 of the Treaty, not on the basis of any other theory or measure.¹⁴
16. In any event, even if *Chorzów Factory* were relevant, the Tribunal would be required to award compensation that would re-establish the situation which would, in all probability, have existed, had the unlawful act not been committed. The Respondent claims that Devas would “definitely” have been subject to all of India’s policies and procedures, which indicates that “in all probability” Devas would not have been granted a licence; and if a change in policy allowed terrestrial use of such spectrum, spectrum fees to be charged would have been commensurate with auction prices.¹⁵
17. The Respondent does not agree with the distribution of spectrum in the Reduced Spectrum Scenario advanced by the Claimants as it considers that their assumption of a contiguous spectrum allocation not only overstates Devas’ spectrum entitlement but also adversely impacts the deployment of spectrum allocated for its essential security interests.¹⁶
18. The Respondent also criticizes the lack of consideration for the allegedly inevitable delay in the launch of the satellites which, as military satellites, would have needed to be launched using India’s indigenous Geosynchronous Satellite Launch Vehicle (“**GSLV**”) and required further testing. The Respondent claims that if such delays were considered, the value of Devas would be significantly reduced.¹⁷
19. The Respondent regards the use of discounted cash flow (“**DCF**”) valuation methodology as inappropriate for this case and raises concerns with its implementation by the Claimants, which it considers to have “overstated revenues and understated costs by using assumptions that are unwarranted.”¹⁸
20. Pursuant to the Tribunal’s request of November 13, 2017, the Respondent also addresses an alternative valuation approach for the Original Spectrum Scenario. The Respondent’s position is

¹⁴ Respondent Rejoinder on Quantum ¶ 6.

¹⁵ Respondent’s Counter-Memorial on Quantum ¶ 13; Respondent Rejoinder on Quantum ¶ 6.

¹⁶ Respondent’s Counter-Memorial on Quantum ¶ 8; Respondent Rejoinder on Quantum ¶ 3.

¹⁷ Respondent’s Counter-Memorial on Quantum ¶ 8; Respondent Rejoinder on Quantum ¶ 11.

¹⁸ Respondent’s Counter-Memorial on Quantum ¶ 8.

that Devas' business was non-viable as of the valuation date,¹⁹ and requests the Tribunal to conclude that it had no value as of the valuation date and to award no damages.²⁰

II. PROCEDURAL HISTORY

A. COMMENCEMENT OF THE ARBITRATION

21. The following constitutes an abridged summary of the course of the proceedings. A more detailed account of the procedural history preceding the issuance by the Tribunal on July 25, 2016 of an Award on Jurisdiction and Merits may be found within that award.
22. By Notice of Arbitration dated July 3, 2012, the Claimants commenced arbitration proceedings against the Respondent pursuant to Article 3 of the Arbitration Rules of the United Nations Commission on International Trade Law (1976) (the “**UNCITRAL Rules**”) and Article 8 of the September 4, 1998, Agreement Between the Government of the Republic of Mauritius and the Government of the Republic of India for the Promotion and Protection of Investments, which entered into force on June 20, 2000 (the “**Mauritius-India Treaty**” or the “**Treaty**”).
23. On July 1, 2013, the Claimants submitted their Statement of Claim (the “**Statement of Claim**”).
24. On October 16, 2013, the Tribunal issued Procedural Order No. 1.
25. On December 2, 2013, the Respondent submitted its Statement of Defence (the “**Statement of Defence**”).
26. On January 31, 2014, the Tribunal issued Procedural Order No. 2 Concerning the Parties' Document Production Requests of January 14, 2014.
27. On March 18, 2014, the Claimants submitted their Statement of Reply on Jurisdiction and Liability (the “**Statement of Reply**”).
28. On June 16, 2014, the Tribunal issued Procedural Order No. 3 Concerning the Claimants' Document Production Request of May 16, 2014.
29. On July 1, 2014, the Respondent submitted its Rejoinder (the “**Respondent's Rejoinder**”).

¹⁹ Respondent's Counter-Memorial on Quantum ¶ 7; Respondent Rejoinder on Quantum ¶¶ 13, 24.

²⁰ Respondent's Counter-Memorial on Quantum ¶ 73; Respondent Rejoinder on Quantum ¶ 129.

30. On August 4, 2014, the Parties and the Tribunal held a telephone conference in preparation for the Hearing on Jurisdiction and Liability to be held between September 1 and September 5, 2014.
31. On September 1-5, 2014, a Hearing on Jurisdiction and Merits was held at the Peace Palace in The Hague, the Netherlands.
32. On January 18, 2015, the Tribunal issued Procedural Order No. 4 Concerning the Respondent's Documents Submitted on December 20, 2014.
33. On September 21, 2015, the Tribunal issued Procedural Order No. 5 Concerning the Submission of Information Regarding the Launch of GSAT-6.

B. AWARD ON JURISDICTION AND MERITS

34. On July 25, 2016, the Tribunal issued the Award on Jurisdiction and Merits (the "**Award on Jurisdiction and Merits**" or "**Partial Award**"), the dispositive part of which provides:

501. **For the reasons set out above, the Tribunal decides and awards as follows:**

- (a) **Unanimously, that the Claimants' claims relate to an "investment" protected under the Treaty;**
- (b) **Unanimously, that the notice of termination of the Devas Agreement sent by Antrix to Devas constituted an act of State attributable to the Respondent.**
- (c) **By majority, that the Tribunal lacks jurisdiction over the Claimants' claims insofar as the Respondent's decision to annul the Devas Agreement was in part directed to the protection of the Respondent's essential security interests;**
- (d) **By majority, that the Respondent has expropriated the Claimants' investment insofar as the Respondent's decision to annul the Devas Agreement was in part motivated by considerations other than the protection of the Respondent's essential security interests;**
- (e) **By majority, that the protection of essential security interests accounts for 60% of the Respondent's decision to annul the Devas Agreement, and that the compensation owed by the Respondent to the Claimants for the expropriation of their investment shall therefore be limited to 40% of the value of that investment;**
- (f) **Unanimously, that the Respondent has breached its obligation to accord fair and equitable treatment to the Claimants between July 2, 2010 and February 17, 2011.**
- (g) **Unanimously, that the Claimants' other claims shall be dismissed;**
- (h) **Unanimously, that any decision regarding the quantification of compensation or damages, as well as any decision regarding the allocation**

of the costs of arbitration, shall be reserved for a later stage of the proceedings.²¹

35. Arbitrator David Haigh appended a dissenting opinion, in which he notably disagreed with the majority's conclusions that the Respondent's decision to annul the Devas Agreement was in part directed to the protection of the Respondent's essential security interests, and that the protection of essential security interests accounted for 60% of the Respondent's decision to annul that Agreement.

C. WRITTEN PROCEEDINGS ON DAMAGES

36. Following several unsuccessful attempts since August 2, 2016 by the Parties to consult bilaterally on the further timetable of the proceedings, the Tribunal, on September 5, 2016, formally invited the Parties to initiate consultations in respect of a procedural calendar for the quantum phase without delay and to inform the Tribunal of the results of such consultations by September 27, 2016. In default of agreement, the Tribunal proposed several possible dates to hold a telephone conference with the Parties, following which the Tribunal would determine the procedural timetable by way of a procedural order.
37. On September 15, 2016, the Parties informed the Tribunal that they had reached agreement in principle on a briefing and hearing timetable assuming the availability by the Tribunal on specific dates.
38. On September 22, 2016, the Tribunal notified the Parties of its availability for a hearing on quantum.
39. On September 27, 2016, the Parties informed the Tribunal about their agreement on the timetable for the written submissions and the hearing on quantum on the basis of the Tribunal's availability.
40. On September 29, 2016, the Tribunal issued Procedural Order No. 6 Concerning the Procedural Calendar for the Quantum Phase, which memorialized the Parties' agreed proposal regarding the procedural calendar.
41. On October 27, 2016, the Respondent submitted a letter informing the Tribunal that on August 11, 2016, India's Central Bureau of Investigation had filed charges against Devas and a number of its present and former officers and directors, as well as a number of former Indian Government officials with crimes under the Indian Penal Code and the Prevention of Corruption Act. The

²¹ Award on Jurisdiction and Merits ¶ 501.

Respondent further contended that if such charges were upheld, the Devas Contract would be void *ab initio* under Indian law and the Tribunal's determination that it was a valid and binding agreement and an "investment" under the Treaty could not be sustained. Accordingly, the Respondent requested the stay of arbitral proceedings pending the resolution of the criminal charges, and asked that the case be dismissed if those charges were upheld. The Respondent further indicated that it was moving to set aside the Award on Jurisdiction and Merits on a number of grounds under the Dutch Code of Civil Procedure relating to these illegalities, "essential security interests" and certain "pre-investment" issues.

42. On November 21, 2016, the Claimants opposed the Respondent's requests. The Claimants argued that the purported recent developments pre-dated the agreement between the Parties on a procedural calendar for the quantum phase, which was memorialized in Procedural Order No. 6. Therefore, the Respondent should be held to such agreement. Furthermore, the Claimants contended that the findings in the Award on Jurisdiction and Merits, as a partial award, were final and binding within the meaning of Article 32(2) of the UNCITRAL Rules.
43. On December 21, 2016, the Tribunal issued Procedural Order No. 7 Concerning the Respondent's Request for Suspension of the Proceedings. The Tribunal noted that "[t]he Partial Award on Jurisdiction and Merits (...) was final and binding under Article 32(2) of the UNCITRAL Arbitration Rules in respect of the matters decided in it by the Tribunal." Moreover, "the CBI investigation was initiated in 2014 and its Charge Sheet was issued on 11 August 2016. The Respondent was therefore aware of its contents when it agreed to the timetable for the determination of damages as contained in Procedural Order No. 6 of 29 September 2016." The Tribunal thus concluded that "[i]n the present circumstances, (...) the Respondent's application for a stay must be denied, and that this arbitration shall proceed on the basis of the timetable set forth in Procedural Order No. 6."
44. On December 28, 2016, the Respondent submitted a letter confirming that it was prepared to proceed in accordance with the briefing schedule but making clear that it reserved the right to raise this issue and to challenge any future award which may be rendered in this case.
45. On January 16, 2017, the Claimants submitted their Submission on Quantum ("**Claimants' Submission on Quantum**").
46. On May 15, 2017, the Respondent submitted the Counter-Memorial on Quantum ("**Respondent's Counter-Memorial on Quantum**").

47. On the same date, the Respondent requested the production of certain documents by the Claimants and further requested that the process of document production be handled by an “exchange of correspondence” instead of a “formal process involving a ‘Redfern Schedule’.”
48. On June 2, 2017, the Claimants provided their comments and requested that the Respondent’s document production request be denied in full on the basis that Procedural Order No. 6 did not contemplate a phase for document production and because the Respondent’s requests did not meet the UNCITRAL Rules or the IBA Rules standards. In any event, if the requests were granted, the Claimants requested that a Redfern Schedule be used.
49. On June 12, 2017, the Respondent submitted its comments and contended that the fact that Procedural Order No. 6 did not contemplate a document production phase was irrelevant since, under Article 24(3) of UNCITRAL Rules, an arbitral tribunal may order the production of documents “at any time during the arbitral proceedings.” The Respondent further contended that its document production requests met the applicable legal standards.
50. On June 21, 2017, the Claimants submitted further comments contending the scope, relevance and materiality of the Respondent’s document production requests.
51. On July 19, 2017, the Tribunal issued Procedural Order No. 8 Concerning the Respondent’s Request for the Production of Documents Pertaining to Quantum. The Tribunal denied the Respondent’s request but invited the Claimants to instruct their experts to address four points identified by the Respondent within Request 4 in their Reply Expert Report: “(i) the alternatives for the split of the spectrum resulting from the Tribunal’s decision regarding India’s essential security interests; (ii) the impact on Devas’ purported ‘first mover’ status of a delay in satellite launch and/or a delay in the implementation of Devas services by reason of the status of the terrestrial technology that is assumed; (iii) the impact on Devas’ business of its inability to provide mobile telephony services; and (iv) the 6 July 2010 letter from the Secretary of the DOT to the Department of Space (Ex. R-138) and the 28 July 2010 letter from the Wireless Advisor to the Department of Space (Ex. R-139).”
52. On July 31, 2017, the Claimants submitted the Reply on Quantum (“**Claimants’ Reply on Quantum**”).
53. On September 20, 2017, the Respondent informed the Tribunal that, at its request, the Parties had agreed to an extension of the time by which the Respondent was to submit its Rejoinder on Quantum from October 16 to October 20, 2017. On the same date, the Tribunal approved the extension agreed between the Parties.

54. On October 10, 2017, in preparation for the damages hearing, the Tribunal invited the Parties to confer and provide their views, if possible jointly, on a draft Procedural Order No. 9 addressing logistical and procedural aspects of the quantum hearing by October 20, 2017.
55. On October 13, 2017, the Claimants' counsel informed the Tribunal that they had conferred with the Respondent's counsel in view of the fact that the Respondent's Rejoinder on Quantum was due on October 20, 2017, and had agreed to request the Tribunal that the Parties be permitted to provide their comments on draft Procedural Order No. 9 by October 27, 2017.
56. On October 16, 2017, the Tribunal granted the extension requested by the Parties of the time limit for the submission of comments on draft Procedural Order No. 9.
57. On October 20, 2017, the Respondent submitted the Rejoinder on Quantum ("**Respondent's Rejoinder on Quantum**").
58. On October 27, 2017, the Parties submitted their comments on draft Procedural Order No. 9. The Parties agreed on all but one procedural issue.
59. On October 31, 2017, the Tribunal issued Procedural Order No. 9 Concerning the Hearing on Quantum.
60. On November 13, 2017, the Tribunal requested the Parties to ask their experts to provide by November 29, 2017 a calculation of the amount of compensation based on the following alternative approach: "What is 40% of the value of the investment as it was actually made by the Claimants, *i.e.* in consideration of all rights and obligations set out in the Devas Agreement including access to 63 Mhz of S-band spectrum?."
61. On November 29, 2017, the Parties submitted their expert reports providing a calculation of the amount of compensation based on this alternative approach.
62. By letter of December 1, 2017, the Tribunal informed the Parties that due to an unexpected health issue affecting a member of the Tribunal the hearing was postponed to a date to be determined in due course.
63. On December 5, 2017, the Respondent informed the PCA that, in light of the unforeseen developments resulting in the postponement of the Hearing on Quantum, the Parties had agreed to delay the submission of preliminary comments concerning the alternative damages calculations presented by the experts on November 29, 2017, at least to January 19, 2018. On the same date, the Tribunal confirmed that the requested submission extension was granted and noted that,

should the Parties require further time beyond January 19, 2018 to submit their comments, the Tribunal would be open to considering any request for a further postponement in due course.

64. On January 9, 2018, the Respondent conveyed the Parties' agreement that the submission date of January 19, 2018 should be extended *sine die* and informed the Tribunal that the Parties would revert as soon as possible on a new agreed date or on alternative dates in the absence of agreement.
65. On January 11, 2018, the Tribunal confirmed that it was agreeable to extending the date for the Parties' comments on the alternative quantum calculations *sine die*. The Tribunal also informed the Parties that it looked forward to hearing from the Parties at their early convenience in respect of a new due date for such comments, if possible agreed between the Parties.
66. On February 27, 2018, the Tribunal wrote to the Parties recalling its January 11, 2018 communication, advising that it would hope to receive the Parties' comments no later than in the course of the month of April, and renewing its request to the Parties to consult with each other with a view to agreeing on a due date for such comments.
67. On March 20, 2018, the Tribunal requested the Parties to revert by March 26, 2018, with an agreed due date for the Parties' comments on the alternative quantum calculations in the course of April, noting that should no such date be agreed by that date, it intended to set a due date without further consultation of the Parties.
68. On March 21, 2018, the Claimants informed the Tribunal that the Parties had exchanged proposals and planned to update the Tribunal in this matter by March 23, 2018.
69. On March 23, 2018, the Claimants informed the Tribunal that the Parties had agreed on a submission date of April 26, 2018 at 10 p.m. United States Eastern Daylight Time. The Claimants also expressed their understanding as to the content of such submissions, and noted that they intended to seek permission from the Tribunal to submit a copy of the *Deutsche Telekom AG v. India* interim award on jurisdiction and merits (the "**DT Award**") into the evidentiary record and to make written observations on its relevance to this proceeding as part of their April 26, 2018 submission.
70. On the same date, the Respondent provided its views as to the content of the April 26, 2018 submissions as well as its intention to seek the Tribunal's permission to submit the application to set aside the DT Award that was filed with the Swiss Federal Tribunal.
71. On March 26, 2018, the Claimants confirmed the Parties' agreement to the submission in this arbitration of the DT Award and India's set aside application before the Swiss Federal Tribunal,

and that the Parties should be permitted to comment on the relevance (if any) of both documents in their forthcoming April 26, 2018 submissions. The Claimants also set out the Parties' disagreement as to the admissible content of such submissions.

72. On March 27, 2018, the Respondent provided its comments on the Claimants' communication of March 26, 2018 regarding the admissible content of such submissions.
73. On April 3, 2018, the Tribunal issued Procedural Order No. 10 Concerning the Contents of the Parties' April 26, 2018 Submissions.
74. By letter dated April 10, 2018, the Respondent informed the Tribunal that GSAT-6A, the second satellite, had been launched on March 29, 2018 and had encountered technical problems immediately after launch.
75. On April 26, 2018, both sides submitted comments on alternative valuation calculations that had been requested by the Tribunal, enclosing supplemental expert reports; and both sides also submitted comments on the relevance (if any) of the DT Award and on India's set aside application before the Swiss Federal Tribunal.
76. As part of its April 26, 2018 submission, the Claimants requested the Tribunal to order the Respondent to "(i) immediately produce [Appendix] VA-10 in unredacted form, together with all other documents previously redacted by India (as logged in the February 14, 2014 and July 11, 2014 redaction logs); and (ii) immediately produce in unredacted form all documents disclosed by it in [*Deutsche Telekom AG v. Republic of India*, PCA Case No. 2014-10 (the "**DT Arbitration**")]. Claimants reserve the right to request further relief once the full contents of such documents are disclosed to Claimants."²²
77. On May 2, 2018, the Respondent submitted a Reply to Claimants' Observations on the Impact of the DT Award in this Arbitration.
78. On May 7, 2018, the Claimants provided observations on the Respondent's Reply dated May 2, 2018, and "request[ed] that the Tribunal grant the relief requested at paragraph 104 of Claimants' April 26, 2018 submission and thus order the production of all documents, within three (3) business days, produced in the DT case along with complete copies of all documents that were produced in this arbitration in redacted format."²³

²² Claimants' Observations on the Impact of the DT Award in this Arbitration, dated April 26, 2018 ¶ 104.

²³ Claimants' letter of May 7, 2018 at page 3.

79. By letter of the same date, the Respondent noted, *inter alia*, that it would respond to the Claimants' new submission at the hearing; it also requested the Tribunal's permission to introduce a new document relevant to discount rates for the valuation of venture capital projects into the record.
80. On May 10, 2018, the Respondent provided observations on the Claimants' letter of May 7, 2018; and enclosed "a copy of the final version of the document [Appendix VA-10] produced in the DT case, where it was marked as Ex. C-252."
81. On May 11, 2018, the Tribunal issued Procedural Order No. 11 Concerning the Claimants' Requests for Additional Document Production and the Respondent's Request for Leave to Introduce New Evidence. Pursuant to this Procedural Order, "[t]he Respondent [wa]s requested to produce to the Claimants and the Tribunal, in the same form as they were produced in the DT Arbitration, all other documents on the record of the present arbitration which were produced in the DT Arbitration in more complete form." Moreover, "[t]he Respondent's request for leave to introduce into the record the document described in its letter dated May 7, 2018 [wa]s granted."
82. By e-mail of May 15, 2018, the Respondent alleged that Deutsche Telekom's ("DT")²⁴ Memorial on Quantum in the DT Arbitration, together with accompanying witness statements and expert report, "contains positions that are materially inconsistent with those of the Claimants in this case," evincing "fundamental factual discrepancies that go to the heart of Claimants' valuation exercise." The Respondent noted in particular that the evidence in the DT Arbitration raised questions as to whether the cash flows in certain models prepared by Devas between 2007 and 2009, referred to as the Series-C Model, the Bravo Model and the Darwin Model, were expressed in real or nominal terms; and requested "a telephone conference with the Tribunal at the earliest possible time."
83. By correspondence of May 17, May 18, May 19, May 20, May 21, May 23 and May 24, 2018, the Claimants and the Respondent exchanged views on ways in which the purported discrepancies between the evidence submitted in the present arbitration and the evidence submitted in the DT Arbitration might be addressed.
84. On May 18, 2018, the Respondent produced to the Claimants and the Tribunal certain documents pursuant to the Tribunal's decision in Procedural Order No. 11, and introduced into the record a new document with leave of the Tribunal.

²⁴ The defined term DT will be used throughout the text to refer to the Deutsche Telekom group of companies, including Deutsche Telekom AG and any affiliates.

85. On May 25, 2018, the Tribunal issued Procedural Order No. 12 Concerning Quantum Evidence Tendered in Proceedings Instituted by Deutsche Telekom. Pursuant to this Procedural Order, the Respondent “[wa]s requested, in accordance with Article 23(4) of the UNCITRAL Rules, to produce the DT quantum papers, including but not limited to witness statements by DT’s (former) Head of Corporate Finance and Vice President in Mergers and Acquisitions, to the Claimants and the Tribunal **by 1 June 2018**. (...) The Claimants [we]re invited to provide any preliminary comments on the DT quantum papers that they may have **by 15 June 2018**, without prejudice to the right of both sides to address the matter further at the Hearing.” Moreover, the Tribunal considered “that it would assist the Tribunal’s task if DT’s (former) Head of Corporate Finance and Vice President in Mergers and Acquisitions, who seems to have submitted a statement in the DT Arbitration, were willing to testify before the present Tribunal as witness. The Tribunal accordingly invite[d] him to appear as witness at the forthcoming hearing on quantum (...).”
86. On June 1, 2018, counsel for DT informed the Tribunal that Mr. Axel Scheuermann, DT’s former Head of Corporate Finance and Vice President in Mergers and Acquisitions (“**Mr. Scheuermann**”), had declined the Tribunal’s invitation to attend the Hearing on Quantum.
87. On the same date, the Respondent submitted, pursuant to Procedural Order No. 12, the “DT quantum papers,” noting that DT and the DT tribunal had no objections to their provision to the present Tribunal, subject to their being held in confidence.
88. On the same date, the Claimants submitted, pursuant to Procedural Order No. 11, their initial comments on the documents newly-produced by the Respondent on May 18, 2018.
89. On June 12, 2018, the Tribunal conveyed to the Parties its intention to seek the technical assistance of Professor Alix Mandron, former professor of finance at the *École des hautes études commerciales* in Montréal, Canada, as an expert advisor, who “would (...) provide technical support to the Tribunal throughout the quantum phase of these arbitral proceedings, as directed by the Tribunal, in relation to the valuation of the Claimants’ investment.” The Tribunal enclosed draft terms of reference for the expert advisor and her *curriculum vitae*, and requested the Parties to provide any comments thereon by June 18, 2018.
90. By letter dated June 15, 2018, the Claimants requested leave to introduce seven new exhibits into the record.
91. By letter dated June 15, 2018, the Claimants submitted, pursuant to Procedural Order No. 12, their Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding.

92. By letter dated June 15, 2018, the Respondent provided a submission pursuant to paragraph 9(iii) of Procedural Order No. 11.
93. By e-mail of June 18, 2018, the Respondent informed the Tribunal that it might wish to refer to the award in the *Bear Creek Mining Corporation v. Republic of Peru* during the hearing as well as to Devas' submissions relating to quantum in the ICC Arbitration, requesting the Tribunal's permission should the Claimants have any objection.
94. On June 18, 2018, the Tribunal noted the Respondent's conclusion in its June 15, 2018 submission and invited the Claimants to inform the Tribunal of their position in respect of the Respondent's conclusions, including whether they agreed to the conditions set out in paragraph 4 of such submission, by June 21, 2018.
95. By letter dated June 18, 2018, the Claimants provided their comments on the proposed terms of reference for Professor Mandron as expert advisor.
96. By letter of the same date, the Tribunal addressed the Parties in respect of the arrangements for the upcoming hearing.
97. By letter dated June 20, 2018, the Claimants provided comments in response to the Respondent's e-mail of June 18, 2018.
98. By e-mail of June 20, 2018, the Tribunal noted that, having received no comments from the Respondent on the proposed appointment of Professor Mandron, the draft terms of reference, or the amendments thereto proposed by the Claimants, the Tribunal assumed that the Respondent did not have any objections. The Tribunal invited the Respondent to provide comments thereto, if it so wished, by June 21, 2018.
99. By e-mail of June 21, 2018, the Respondent advised that it had no comments on the proposed appointment of Professor Mandron, the draft terms of reference, or the Claimants' proposed modifications.
100. On the same date, the Claimants submitted their Position in Respect of the Conclusions Set Forth in the Respondent's June 15, 2018 Submission.
101. By e-mail of June 22, 2018, the Respondent confirmed that it did not object to the admission into the record of the documents announced in the Claimants' letter of June 15, 2018 provided that the documents mentioned in the Respondent's e-mail of June 18, 2018 were also admitted.

102. By e-mail of the same date, the Respondent provided comments in response to the Claimants' correspondence of June 21, 2018.
103. On June 25, 2018, the Tribunal issued Procedural Order No. 13, Concerning Requests for the Disclosure, or Admission into the Record, of Additional Evidence.
104. On June 25, 2018, a final and signed version of the Terms of Reference of Professor Mandron as Expert Advisor to the Tribunal was circulated to the Parties.
105. By letter dated June 25, 2018, following Procedural Order No. 13, the Respondent requested permission to introduce certain documents into the record.
106. By e-mail of the same date, the Tribunal invited the Claimants to provide comments on the Respondent's request by June 27, 2018.
107. By letter dated June 27, 2018, the Claimants submitted a response to Procedural Order No. 13 and provided comments to the Respondent's letter dated June 25, 2018.
108. By letter of the same date, the Respondent requested permission to introduce another document into the record.
109. On June 29, 2018, the Tribunal issued Procedural Order No. 14, Concerning Requests for Leave to Introduce New Evidence.
110. By letter dated June 29, 2018, the Claimants confirmed that there were no modifications to their witness list except the order of presentation of their experts.
111. By e-mail of the same date, the Respondent submitted, pursuant to Procedural Order No. 13, the award in *Bear Creek Mining v. Peru* as Exhibit R-224, confirmed that it would produce to the Claimants the testimony of Messrs. Sethuraman and Anand in the DT Arbitration, and confirmed that it did not have any changes to its list of witnesses to be examined at the hearing.
112. On July 3, 2018, pursuant to Procedural Order No. 14, the Respondent submitted Exhibits R-225-236.
113. On July 3, 2018, the Tribunal informed the Parties that it had requested the expert advisor to be present at the hearing during the examination of both sides' experts and during the closing statements.

114. By letter dated July 4, 2018, the Claimants expressed the view that the Respondent's production of the testimony of Messrs. Anand and Sethuraman in the DT Arbitration was not complete and requested the Tribunal to order the Respondent to produce complete copies of their witness statements (including annexes) and all documents which were the subject of testimony of these witnesses at the hearing (including in cross-examination).
115. By letter of the same date, the Claimants submitted, pursuant to Procedural Order No. 14, an additional exhibit (C-304) in response to the submission by the Respondent of Exhibit R-225.
116. By e-mail of July 5, 2018, the Respondent was invited to comment on the Claimants' correspondence of July 4, 2018 by July 9, 2018.
117. On July 6, 2018, the Parties reverted to the Tribunal in relation with certain hearing arrangements.
118. On July 9, 2018, the Respondent provided its comments on the Claimants' letter of July 4, 2018.
119. On July 10, 2018, the Tribunal issued Procedural Order No. 15, Concerning the Claimants' Requests for Production of Further Documents.
120. On July 12, 2018, pursuant to Procedural Order No. 15, the Parties provided their respective consolidated list of exhibits.

D. HEARING ON DAMAGES

121. Pursuant to Procedural Orders No. 6 and 9, the Tribunal was to hold a Hearing on Quantum (the "**Hearing on Quantum**") from December 12 to December 18, 2017 at the Peace Palace in The Hague, The Netherlands.
122. As noted above, on December 1, 2017, the PCA informed the Parties on behalf of the Arbitral Tribunal that due to an unexpected health issue affecting a member of the Tribunal the Hearing on Quantum was postponed to a date to be determined in due course.
123. On December 13, 2017, the Tribunal consulted with the Parties in respect of alternative dates for the Hearing on Quantum. Both sides confirmed that they were agreeable to holding the Hearing on Quantum from July 16 through and including July 21, 2018.
124. On January 2, 2018, the Tribunal fixed the dates of the Hearing on Quantum from July 16 through and including July 21, 2018, to be held, as previously agreed, in The Hague, The Netherlands.
125. The following were present at the Hearing on Quantum:

For the Claimants:

Counsel and Advisors

Mr. John L. Gardiner
Mr. Timothy G. Nelson
Ms. Betsy A. Hellmann
Ms. Sharmistha Chakrabarti
Mr. Gunjan Sharma
Ms. Jennifer Huang
Mr. Aaron Shorr
Ms. Emma Keldsen
Ms. Amanda Esteves
Ms. Paulina Pavese
Skadden, Arps, Slate, Meagher & Flom LLP

Mr. Harish Salve
Mr. Ciccu Mukhopadhaya
Mr. Syed Omar Balil Ahmad
Indian Counsel

Witnesses and Client Representatives

Mr. Coleman Bazelon
Mr. Benjamin Sacks
Mr. Lucrezio Figurelli
Mr. Florin Dorobantu
Mr. Ramachandran Viswanathan
Mr. Kim Larsen
Mr. Gary Parsons
Mr. Arun Gupta
Mr. Serge Martin

For the Respondent:

Counsel and Advisors

Mr. George Kahale, III
Mr. Benard Preziosi
Mr. Fernando Tupa
Mr. Fuad Zarbiyev
Mr. Simon Batifort
Ms. Gloria Diaz-Bujan
Mr. Christopher Grech
Curtis, Mallet-Prevost, Colt & Mosle LLP

Mr. Suresh Chandra
Secretary to Government of India, Ministry of Law and Justice, Government of India

Mr. P.S. Narasimha
Additional Solicitor General of India, Government of India

Mr. K.M. Arya

Additional Legal Advisor, Ministry of Law and Justice, Government of India

Mr. K. Parameshawar

Advocate, Junior to Additional Solicitor General of India

Mr. Anoop Srivatsava

Joint Secretary and Financial Advisor, Department of Space, Government of India

Mr. Praveen Karanth

Director, Department of Space, Government of India

Mr. M.S. Krishnan

Officer on Special Duty, Department of Space, Government of India

H.E. Mr. Venu Rajamony

Ambassador of India to the Kingdom of the Netherlands

Dr. Kajal Bhat

*Counsellor (Legal), Embassy of India,
the Netherlands*

Witnesses and Experts

Mr. A. Vijay Anand

Mr. K. Sethuraman

Mr. K.S. Parikh

Mr. Nitin Jain

Smt. M. Revathi

Mr. M. Bhagirath

Mr. Jacob Sharony

Mr. Daniel Flores

Mr. Ettore Comi

Mr. Ivan Vazquez

Ms. Eleanor Coates

Arbitral Tribunal

Hon. Marc Lalonde, P.C., O.C., Q.C. (Presiding Arbitrator)

Mr. David R. Haigh, Q.C.

Hon. Shri Justice Anil Dev Singh

Expert Advisor to the Tribunal

Prof. Alix Mandron

Registry

Mr. Dirk Pulkowski

Ms. Elena Laura Álvarez Ortega

Permanent Court of Arbitration

126. On July 16, 2018, both sides submitted an electronic copy of their respective opening presentations at the Hearing on Quantum.

127. On July 22, 2018, both sides submitted electronic copies of the slides used by their experts during the Hearing on Quantum, and the Claimants submitted an electronic copy of their closing presentation.

E. POST-HEARING PROCEEDINGS

128. By letter dated July 25, 2018, the Respondent submitted, pursuant to the Tribunal's request on the last day of the Hearing on Quantum, the specific sheets and cells of the Darwin Model to which Mr. Flores took the Tribunal during the Hearing.
129. On October 24, 2018, the Respondent submitted a letter from the tribunal in the DT Arbitration directing India to "take the necessary steps, if any, vis-à-vis the Mauritius BIT tribunal to allow for filing of the entire quantum record of the Mauritius BIT arbitration."
130. On the same date, the Claimants were invited to provide their comments, if any, on the Respondent's letter.
131. On October 26, 2018, the Claimants indicated that they did not object to the submission of the entire quantum record of this arbitration in the DT Arbitration.
132. By letter dated October 30, 2018, the Tribunal confirmed that it did not have any objection to India filing the quantum record of this arbitration in the DT Arbitration and, for the sake of good order, requested the Respondent to provide the Claimants with an electronic copy of that filing.
133. By letter dated November 25, 2018, the Claimants informed the Tribunal that, on November 14, 2018, the District Court in The Hague had issued a judgment rejecting the Respondent's petition to set aside the Award on Jurisdiction and Liability, and requested leave from the Tribunal to submit an English translation of the judgement into the record.
134. On November 27, 2018, the Tribunal granted the Claimants' request for leave to submit an English translation of the above-mentioned judgement into the record, to which the Respondent had consented.
135. On March 4, 2019, the Respondent seek leave from the Tribunal to submit into the record two awards which had been published recently with a short explanation of their relevance.
136. On the same day, the Claimants requested that the Respondent be directed to disclose the awards to the Claimants to evaluate them and respond accordingly.

137. On the same date, the Respondent informed that the awards to which its request referred were *William Richard Clayton, Douglas Clayton, Daniel Clayton, and Bilcon cf Delaware, Inc. v. The Government cf Canada*, PCA Case No. 2009-04 (UNCITRAL), Award on Damages, 10 January 2019; and *South American Silver Limited (Bermuda) v. Plurinational State cf Bolivia*, PCA Case No. 2013-15, Award, 22 November 2018, both publicly available.
138. On March 5, 2019, the Claimants objected to the Respondent briefing the Tribunal on such awards, arguing that this would result in post-hearing briefs by default, and expressed their view that the Tribunal should not entertain any form of submissions that could delay the issuance of the award.
139. On the same date, the Respondent provided its comments on the Claimants' views and suggested merely to provide references to the relevant paragraphs from the awards and dispense with the short explanation of their relevance.
140. On March 6, 2019, the Tribunal authorized the Respondent to produce the two awards and give them an exhibit number. Each side was authorized to add a reference to the sections of such awards to which they wished to draw the Tribunal's attention, without any further comment.
141. On March 7, 2019, the Respondent submitted into the record the *Bilcon et al v. Canada* (Ex. **R-237**) award and the *South American Silver v. Bolivia* award (Ex. **R-238**), indicating the paragraphs to which it called the Tribunal's attention.
142. On March 12, 2019, the Claimants indicated the paragraphs of the *Bilcon et al v. Canada* and the *South American Silver v. Bolivia* awards to which the Claimants drew the Tribunal's attention.
143. On May 5, 2019, the Respondent requested leave from the Tribunal to submit into the record the transcript of Mr. Scheuermann's testimony at the hearing on quantum in the DT Arbitration.
144. On May 6, 2019, the Tribunal invited the Claimants to comment on the Respondent's request by 10 May 2019.
145. On May 8, 2019, the Claimants submitted that they were not in a position to provide a substantive response to the Respondent's request until the Respondent provided them with a copy of the quantum hearing transcript in the DT Arbitration, designating the portions it proposed to submit into the record.
146. On May 9, 2019, the Tribunal informed that the due date for the Claimants' comments on the Respondent's request was suspended pending further direction from the Tribunal.

147. On the same date, the Respondent provided its views in relation to the Claimants' correspondence of May 8, 2019.
148. By letter dated May 13, 2019, the Tribunal requested the Respondent to transmit to the Claimants the full transcript of the quantum hearing in the DT Arbitration by May 17, 2019, indicating the portions that it proposed to submit into the record. The Claimants were invited to comment on the Respondent's request by May 24, 2019, and the Tribunal would decide thereafter by Procedural Order.
149. On May 15, 2019, the Respondent informed that it had transmitted the transcript to the Claimants.
150. By letter dated May 23, 2019, the Claimants indicated that they did not object to the submission of the designated page of Mr. Scheuermann's testimony provided that they had the right to comment thereon. The Claimants objected to the submission into the record of the designated portions of Mr. Harman's testimony.
151. On the same date, the Respondent submitted its views in relation to the Claimants' comments.
152. On May 27, 2019, the Tribunal issued Procedural Order No. 16,²⁵ Concerning Requests for Leave to Submit Portions of the Transcript of the DT Arbitration into the Record.
153. On May 30, 2019, the Respondent sought clarification as to the meaning of the Tribunal's direction in Procedural Order No. 16.
154. On the same date, the Claimants submitted comments in relation to the Respondent's request for clarification.
155. On May 31, 2019, the Respondent submitted further comments in response to the Claimants' comments.
156. On the same date, the Tribunal clarified its request pursuant in Procedural Order No. 16.
157. By letter dated June 3, 2019, the Respondent submitted into the record the designated portion of Mr. Scheuermann's testimony at the quantum hearing in the DT Arbitration and expressed its views as to its relevance.
158. By letter dated June 10, 2019, the Claimants provided their comments thereon.

²⁵ The document was erroneously numbered Procedural Order No. 15.

159. On June 11, 2019, the Respondent provided comments regarding the scope of the above-referenced letter from the Claimants.
160. On March 9, 2020, the Respondent transmitted to the Tribunal copy of a decision of the French Court of Cassation²⁶ together with a copy of the text of the “rapporteur” of the Court. That decision annulled a previous Paris Court of Appeal decision and returning it to a different formation of the Paris Court of Appeal. That decision essentially deals with matters having to do with the jurisdiction of the ICC to authorize the Antrix case to be heard under its rules and procedures. As such, the Tribunal considers that it does not need to address this matter in the present case.
161. By letter dated April 9, 2020, the Tribunal invited the Parties to submit two simultaneous rounds of costs submissions and requested the Parties to detail separately the costs incurred during the jurisdiction and merits phase, and the costs incurred during the quantum phase.
162. By letter dated April 10, 2020, the Claimants gave notice of a change of address of their counsel’s office.
163. On May 8, 2020, the Parties simultaneously submitted their submissions on costs (the “**Claimants’ Submission on Fees and Costs**” and the “**Respondent’s Cost Submission**”).
164. On May 22, 2020, the Parties simultaneously submitted their comments on the other side’s submission on costs (the “**Claimants’ Comments on Respondent’s May 8, 2020 Costs Submission**” and the “**Respondent’s Comments on Claimants’ Submission on Costs**”).
165. On June 1, 2020, the Respondent requested permission of the Tribunal in accordance with Article 29(2) of the UNCITRAL Arbitration Rules to submit a copy of the *Deutsche Telekom AG v. The Republic of India* final award dated May 27, 2020.
166. On June 15, 2020, the Claimants objected to the production of the said award.
167. On June 26, 2020, the Tribunal issued Procedural Order No. 17, Concerning a Request for Leave to Submit the DT Quantum Award into the Record, whereby it authorized the production of the said award with the provision that each Party would have the right to submit comments that could not exceed three pages.

²⁶ *Antrix Corporation Limited v. Devas Multimedia Private Limited*, French Court of Cassation, No. F1822019, Decision of the First Civil Chamber of the Court, dated March 4, 2020.

168. On June 29, 2020, the Respondent produced the said award as Ex. R-240 together with its comments.

169. On July 13, 2020, the Claimants submitted their comments.

III. THE PARTIES' REQUESTS

A. THE CLAIMANTS' REQUESTS

170. The Claimants, in their Submission on Quantum, request from the Tribunal the following relief:

126. Each Claimant is separately and independently entitled to an award of compensation for the violation of its rights under the Mauritius-India BIT.

127. The First Claimant, CC/Devas, seeks:

- (a) an award of damages in the amount of **USD 283 million**;
- (b) pre- and post-award interest on that sum, **compounded**, at **LIBOR +4%**;
- (c) an order that such sums be payable net of taxes, charges, or other set-offs (*i.e.* Respondent may not withhold or offset payment of any portion of the award based on a claim that it is subject to taxation or other deductions);
- (d) an order that Respondent is to indemnify it with respect to any Indian taxes, charges, or other set-offs imposed on the compensation awarded;
- (e) an award of its fees and costs in this proceeding; and
- (f) such other relief as the Tribunal may deem just and proper.

128. The Second Claimant, DEMPL, seeks:

- (a) an award of damages in the amount of **USD 58 million**;
- (b) pre- and post-award interest on that sum, **compounded**, at **LIBOR +4%**;
- (c) an order that such sums be payable net of taxes, charges, or other set-offs (*i.e.* Respondent may not withhold or offset payment of any portion of the award based on a claim that it is subject to taxation or other deductions);
- (d) an order that Respondent is to indemnify it with respect to any Indian taxes, charges, or other set-offs imposed on the compensation awarded;
- (e) an award of its fees and costs in this proceeding; and
- (f) such other relief as the Tribunal may deem just and proper.

129. The Third Claimant, Telcom Devas, seeks:

- (a) an award of damages in the amount of **USD 283 million**;
- (b) pre- and post-award interest on that sum, **compounded**, at **LIBOR +4%**;
- (c) an order that such sums be payable net of taxes, charges, or other set-offs (*i.e.* Respondent may not withhold or offset payment of any portion of the award based on a claim that it is subject to taxation or other deductions);

- (d) an order that Respondent is to indemnify it with respect to any Indian taxes, charges, or other set-offs imposed on the compensation awarded;
- (e) an award of its fees and costs in this proceeding; and
- (f) such other relief as the Tribunal may deem just and proper.²⁷

171. In the Reply on Quantum, the Claimants request the following relief:

- 199. Each Claimant is separately and independently entitled to an award of compensation for the violation of its rights under the Mauritius-India BIT.
- 200. The First Claimant, CC/Devas, seeks:
 - (a) an award of damages in the amount of **USD 263 million**, reflecting its losses as of February 17, 2011;
 - (b) pre- and post-award interest on that sum from February 17, 2011 onwards, **compounded annually**, at the **one-year LIBOR rate +4%**;
 - (c) an order that such sums be payable net of taxes, charges, or other set-offs (*i.e.* Respondent may not withhold or offset payment of any portion of the award based on a claim that it is subject to taxation or other deductions);
 - (d) an order that Respondent is to indemnify it with respect to any Indian taxes, charges, or other set-offs imposed on the compensation awarded;
 - (e) an award of its fees and costs in this proceeding; and
 - (f) such other relief as the Tribunal may deem just and proper.
- 201. The Second Claimant, DEMPL (sic.),²⁸ seeks:
 - (a) an award of damages in the amount of **USD 263 million**, reflecting its losses as of February 17, 2011;
 - (b) pre- and post-award interest on that sum, **compounded annually**, at the **one-year LIBOR rate +4%**;
 - (c) an order that such sums be payable net of taxes, charges, or other set-offs (*i.e.* Respondent may not withhold or offset payment of any portion of the award based on a claim that it is subject to taxation or other deductions);
 - (d) an order that Respondent is to indemnify it with respect to any Indian taxes, charges, or other set-offs imposed on the compensation awarded;
 - (e) an award of its fees and costs in this proceeding; and
 - (f) such other relief as the Tribunal may deem just and proper.
- 202. The Third Claimant, Telcom Devas (sic.),²⁹ seeks:
 - (a) an award of damages in the amount of **USD 54 million**, reflecting its losses as of February 17, 2011;

²⁷ Claimants' Submission on Quantum ¶¶ 126 ff.

²⁸ The Tribunal understands that this is a clerical error, and the amount claimed for DEMPL is USD 54 million, while the amount claimed for Telcom Devas is USD 263 million. The Tribunal refers in this respect to Table 2 in the Reply Expert Report of Mr. Benjamin Sacks, dated July 31, 2017 (hereinafter, "**Sacks II**") as well as the Claimants' Opening Presentation during the Hearing on Quantum, Slide 42, both of which show the correct allocation of the claimed damages to the two claimants.

²⁹ See footnote 28.

- (b) pre- and post-award interest on that sum, **compounded annually**, at the one-year **LIBOR rate +4%**;
 - (c) an order that such sums be payable net of taxes, charges, or other set-offs (*i.e.* Respondent may not withhold or offset payment of any portion of the award based on a claim that it is subject to taxation or other deductions);
 - (d) an order that Respondent is to indemnify it with respect to any Indian taxes, charges, or other set-offs imposed on the compensation awarded;
 - (e) an award of its fees and costs in this proceeding; and
 - (f) such other relief as the Tribunal may deem just and proper.
203. In the alternative, in the event the Tribunal determines that Devas would not have received a terrestrial re-use license to offer BWA services, or would only have received such a license at an uneconomic price, each Claimant is separately and independently entitled to its damages for the loss of an AV-only business. In that event:
- (a) The First Claimant seeks an award of damages in the amount of USD 74 million, reflecting its losses as of February 17, 2011, with pre- and post-award interest, and subject to the other conditions set forth in paragraph 200(b)-(f) above;
 - (b) The Second Claimant (*sic.*)³⁰ seeks an award of damages in the amount of USD 74 million, reflecting its losses as of February 17, 2011, with pre- and post-award interest, and subject to the other conditions set forth in paragraph 201(b)-(f) above; and
 - (c) The Third Claimant (*sic.*)³¹ seeks an award of damages in the amount of USD 15 million, reflecting its losses as of February 17, 2011, with pre- and post-award interest, and subject to the other conditions set forth in paragraph 202(b)-(f) above.³²

B. THE RESPONDENT'S REQUESTS

172. The relief requested by the Respondent in both the Counter-Memorial and the Rejoinder on Quantum is the following:

For the reasons set forth above, the Tribunal should conclude that the Devas business had no value as of the Valuation Date and award no damages to Claimants. In addition, the costs of this case should be assessed against Claimants.³³

IV. LEGAL STANDARD OF REPARATION

173. The Parties are in disagreement as to the applicable legal standard of reparation in this case. While the Claimants affirm that the *Chorzów Factory* principle applies to the determination of

³⁰ See footnote 28.

³¹ See footnote 28.

³² Claimants' Reply on Quantum ¶¶ 199 ff.

³³ Respondent's Counter-Memorial on Quantum ¶ 73; Respondent's Rejoinder on Quantum ¶ 129.

compensation in this case, the Respondent disputes this, and considers that the only applicable standard to calculate compensation is contained in Article 6 of the Treaty.

174. In this case, the Parties made only limited references to the consideration of sunk costs in their evidence and oral submissions. Instead, the Parties focused their attention on the DCF methodology and the comparable valuation asserted by their respective experts.

A. THE CLAIMANTS' POSITION

175. The Claimants assert that the determination of compensation in this case, as with any violation of international law, is governed by the principles espoused by the Permanent Court of International Justice in the *Chorzów Factory* case,³⁴ which establishes that “reparation must, as far as possible, wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability, have existed if that act had not been committed.”³⁵

176. According to the Claimants, “one thus compares the situation that would have existed, but for the violation, to the situation post-violation, and formulates compensation to restore Claimants to the “but for” situation.”³⁶ Applied to this case,

monetary compensation must be sufficient to restore Claimants to the position they would have enjoyed had Respondent *not* engaged in an unlawful expropriation of their investments in February 2011, *not* violated its FET obligations with respect to Claimants’ investments during 2010/2011, and instead conducted itself with good faith towards Claimants and Devas Multimedia Private Limited (“Devas”), and “fully respected” the contract between Devas and Antrix Corporation Limited (“Devas Agreement”), albeit with a reduced spectrum allocation of just 40% of the originally envisioned 63 MHz of S-band spectrum that had been allocated for Devas’s use.³⁷ [footnotes omitted]

177. The Claimants assert that the Award on Jurisdiction and Merits confirms the unlawful seizure by the Respondent of Devas’ investments in 25.2 MHzs of spectrum.³⁸ Furthermore, they claim that in cases of unlawful seizure compensation is due for the “fair market value of that investment in

³⁴ Claimants’ Submission on Quantum ¶ 2; Hearing Transcript, Day 1, pp. 15:24-16:3. See also **CL-102**, *Case Concerning the Factory at Chorzów (Claim for Indemnity) (Germany v. Poland)*, Permanent Court of International Justice, Judgment on the Merits, dated 13 September 1928, 17 PCIJ 4 (SERIES A) (1928).

³⁵ Claimants’ Submission on Quantum ¶¶ 2, 21; Hearing Transcript, Day 1, p. 16:8-12.

³⁶ Claimants’ Submission on Quantum ¶ 2.

³⁷ Claimants’ Submission on Quantum ¶ 3.

³⁸ Claimants’ Submission on Quantum ¶ 20; Hearing Transcript, Day 1, p. 15:4-9.

the situation that would have existed had the violation of international law not occurred”³⁹ (the “but for” scenario).

178. The Claimants assume that, consistently with *Chorzów Factory* and the International Law Commission Articles on the Responsibility of States for Internationally Wrongful Acts 2001 (“**ILC Articles**”), in a “but for” world the government would have acted reasonably and rationally with respect to Devas, would have respected the terms of the Devas Agreement and would not have been animated by plans to “annul” it.⁴⁰ Moreover, the Claimants assume the fulfilment by the Respondent of its international obligations under the bilateral investment treaty (“**BIT**”) protecting the Claimants’ investments.⁴¹
179. These assumptions are regarded by the Claimants as a simple corollary of the *Chorzów Factory* principle that the “consequences” of illegality must be “wiped out.” Furthermore, the Claimants also invoke the principle that a respondent cannot pre-suppose in a “but for” analysis that it would have continued to violate its own contractual undertakings or subject investments to further expropriation.⁴² In support of their position the Claimants refer to the *Azurix* case, the *Lemire* case, and the *Occidental* case.⁴³ Likewise, the Claimants also argue that this is also consistent with the principle of *pacta sunt servanda*,⁴⁴
180. The Claimants accepted at the Hearing on Quantum that “those principles would apply under the standard set forth in Article 6(1) of the Mauritius Treaty.”⁴⁵ Nevertheless, they reiterated their position and argued that “even if there’s no practical distinction in this case between the treaty result (...) and the result under Chorzow factory, under customary International law,”⁴⁶ the treaty standard sets a baseline below which compensation should not fall, and not an upper limit.⁴⁷
181. The Claimants, quoting *CMS Gas Transmission Co. v. Argentina*, also contend that the concept of “fair market value” has the following “internationally recognized” definition;

³⁹ Claimants’ Submission on Quantum ¶ 22.

⁴⁰ Claimants’ Reply on Quantum ¶ 5.

⁴¹ Claimants’ Reply on Quantum ¶ 61.

⁴² Claimants’ Reply on Quantum ¶ 62.

⁴³ Hearing Transcript, Day 6, pp. 1597:19-1598:20.

⁴⁴ Claimants’ Reply on Quantum ¶ 62.

⁴⁵ Hearing Transcript, Day 1, p. 18:9-21.

⁴⁶ Hearing Transcript, Day 1, p. 18:21-24.

⁴⁷ Hearing Transcript, Day 1, pp. 18:24-19:1; Claimants’ Submission on Quantum ¶ 23.

the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.⁴⁸

182. The Claimants further argue, relying on the Tribunal in *Compañía del Desarrollo de Santa Elena, S.A. v. Costa Rica*, that the fair market value of an asset should be assessed “by reference to its highest and best use.”⁴⁹ Accordingly, they claim to be entitled to recover the value of their respective shares of Devas’ expropriated assets, including 25.2 MHz of spectrum, put to its highest and best use.⁵⁰

183. The Claimants accept that the burden of proof of the losses suffered lies on them and, following the *Khan Resources* tribunal, consider that the applicable standard is

balance of probabilities (...) scientific certainty is not required and it is widely acknowledged by investment treaty tribunals and publicists that the assessment of damages is often a difficult exercise and will usually involve some degree of estimation and the weighing of competing (but equally legitimate) facts, valuation methods and opinions (...).⁵¹

184. It is the Claimants’ submission that they have met their burden of proof in this case.⁵²

B. THE RESPONDENT’S POSITION

185. The Respondent denies the applicability of the *Chorzów Factory* standard of compensation to this case as it considers that the Tribunal held in the Award on Jurisdiction and Merits that the only applicable standard to calculate compensation is Article 6 of the Treaty.⁵³

186. While the Claimants justify the applicability of the *Chorzów Factory* standard on the basis that the expropriation of 40% of their investment was unlawful, the Respondent affirms that the term “unlawful” does not appear anywhere in the Tribunal’s ruling.⁵⁴

⁴⁸ Claimants’ Submission on Quantum ¶ 24, quoting **CL-103**, *CMS Gas Transmission Co. v. Argentina*, No. ARB/01/8, Award ¶ 402 (ICSID 2005). See also Hearing Transcript, Day 1, p. 17:7-19.

⁴⁹ Claimants’ Submission on Quantum ¶ 25, quoting **CL-104**, *Compañía del Desarrollo de Santa Elena, S.A. v. Costa Rica*, No. ARB/96/1, Final Award ¶ 70 (ICSID 2000).

⁵⁰ Claimants’ Submission on Quantum ¶ 26.

⁵¹ Claimants’ Submission on Quantum ¶ 27, quoting **CL-108**, *Khan Resources Inc. v. Mongolia*, No. 2011-09, Award ¶¶ 369-370.

⁵² Hearing Transcript, Day 6, p. 1596:21-22.

⁵³ Respondent’s Rejoinder on Quantum ¶ 78.

⁵⁴ Respondent’s Rejoinder on Quantum ¶ 79.

187. In any event, the Respondent claims that the Treaty standard of compensation should be applicable regardless of whether the expropriation was lawful or unlawful. To this effect it relies, among others, on *British Caribbean Bank Ltd. v. Government of Belize*:

at no point does the Treaty, being a *lex specialis*, distinguish between lawful and unlawful expropriation (...) Once the violation of the Treaty provisions regarding expropriation is established, the State has breached the Treaty. Neither is the Tribunal convinced that the generally accepted fair market value standard was intended to apply only in cases of the so-called “lawful expropriation” (...).⁵⁵

188. The Respondent also quotes *Guaracachi America, Inc. and Rurelec PLC v. Plurinational State of Bolivia*, which held:

The BIT makes no distinction between the compensation to be provided in respect of an unlawful expropriation as opposed to a lawful one, and the Tribunal does not find any reason to believe that the illegality of the expropriation renders what the BIT deems to be “just and effective compensation” suddenly inadequate.⁵⁶

189. Moreover, the Respondent claims that the Tribunal expressly held in the Award on Jurisdiction and Merits that the Claimants are entitled to “compensation under Article 6 of the Treaty,”⁵⁷ which provides that compensation for expropriation “shall amount to the market value of the investment expropriated.” Accordingly, “Claimants are only entitled to claim compensation for the ‘market value of the investment’ as of the valuation date, February 2011, not the *Chorzów Factory* standard, as Claimants wrongly allege.”⁵⁸ [emphasis in original]
190. The Respondent also contends that the Claimants have essentially misinterpreted the *Chorzów Factory* standard by assuming that “the “but for” world would be one that would cater to Devas’ interests over the Government’s essential security interests.”⁵⁹
191. While considering the discussion of the *Chorzów Factory* standard’s applicability purely academic in this case because the result would be the same whether or not the standard is applied;⁶⁰ the Respondent further argues that the Claimants are not entitled to ignore any fact that negatively affects their value but, “rather, it requires that all factors, negative as well as positive,

⁵⁵ Respondent’s Rejoinder on Quantum, footnote 207; quoting *British Caribbean Bank Ltd. v. Government of Belize*, PCA Case No. 2010-18/BCB-BZ, Award, December 19, 2014 ¶¶ 260-262.

⁵⁶ Respondent’s Rejoinder on Quantum, footnote 207; quoting **App. EO-136**, *Guaracachi America, Inc. and Rurelec PLC v. Plurinational State of Bolivia*, PCA Case No. 2011-17, Award, January 31, 2014 ¶ 613.

⁵⁷ Respondent’s Rejoinder on Quantum ¶ 79.

⁵⁸ Respondent’s Rejoinder on Quantum ¶ 79.

⁵⁹ Respondent’s Rejoinder on Quantum ¶ 71.

⁶⁰ Respondent’s Rejoinder on Quantum ¶ 80.

that “in all probability” would have been present must be taken into consideration.”⁶¹ [emphasis in original] The Respondent quotes several authorities in this regard.⁶²

192. The Respondent also criticizes that the Claimants consider that, in their calculation, they may assume the “highest and best” use of the asset, while disregarding the Government’s determination of the manner in which it would need to deploy the spectrum to protect its essential security interests.⁶³ As the Claimants’ own authorities acknowledge, the “highest and best use” is circumscribed by “all pertinent legal, physical, and economic constraints.”⁶⁴
193. The Respondent states that a but-for assessment would need to take into account the Indian regulatory regime (which would have precluded the terrestrial use of the spectrum or, if such use were permitted, would require that a charge commensurate with auction prices would be levied); the Government’s need for a shared satellite configuration; and the delay in the satellites’ deployment.⁶⁵
194. Finally, the Respondent notes that, while the Claimants assert a breach of due process by the failure to inform them timely of the decision to reserve the spectrum for non-commercial use, they do not put forward any damage claim for that alleged breach.⁶⁶
195. In sum, the Respondent’s submission is that the “claimant’s burden of proof is not met merely because liability has been found”⁶⁷ and criticise the Claimants’ “conclusory statements that the Devas business must have had some value and that, therefore, [the Respondent’s] and Dr Flores’s conclusion that the DCF analysis actually results in a negative value cannot be right.”⁶⁸

C. THE TRIBUNAL’S ANALYSIS

196. Establishing the valuation date in this case is relatively straight-forward. Both Parties appear to agree that the valuation date should be immediately before the announcement of the Indian Cabinet Committee on Security (“CCS”) decision of February 17, 2011.

⁶¹ Respondent’s Rejoinder on Quantum ¶ 80.

⁶² Respondent’s Rejoinder on Quantum ¶ 80.

⁶³ Respondent’s Rejoinder on Quantum ¶ 82.

⁶⁴ Respondent’s Rejoinder on Quantum ¶ 83.

⁶⁵ Respondent’s Rejoinder on Quantum ¶ 83.

⁶⁶ Respondent’s Rejoinder on Quantum, footnote 222.

⁶⁷ Hearing Transcript, Day 6, p. 1628:9-10.

⁶⁸ Hearing Transcript, Day 6, p. 1629:5-9.

197. Beyond the identification of the proper valuation date, however, the Claimants contend that determining the value of Devas requires the Tribunal to exclude from consideration potentially adverse effects on the value of Devas attributable to India, preceding that date. For example, it is said that the Tribunal should disregard the possibly negative impact of the February 8, 2011 press conference, at which Dr. Radhakrishnan together with Dr. Kasturirangan, announced publically the Space Commission's intention to annul the Devas Agreement.⁶⁹
198. The Tribunal has no difficulty accepting that any adverse impact on value of such governmental actions shortly ahead of any taking must be disregarded. Otherwise, a state wishing to expropriate the property of a foreign investor would only need to have one of its officials announce an intention to take over the investor's property without compensation and then delay that actual decision. In such circumstances, the value of the investment would deteriorate and would not have the same value as it would have had, but for such announcement or intervention.
199. This approach is found specifically in Article 6(1) of the Treaty in relation to valuing property that has been expropriated. It says, in part, "[s]uch compensation shall amount to the market value of the investment expropriated immediately before the expropriation or before the impending expropriation became public knowledge." The Tribunal recognizes this provision embodies what is practically a universal principle to be applied in expropriation cases: the expropriating authority cannot take advantage of its own conduct where it may have negatively influenced or adversely affected the value of what was to be taken ahead of the valuation date.
200. Less obviously, the Claimants say this approach may be important as well when considering the Respondent's reliance, for example, on statements made by persons whose views were solicited in 2010 by Dr. Radhakrishnan in the context of the potential annulment of the Devas Agreement, such as those of P.J. Thomas, Secretary, WPC Wing, DOT, to Secretary, DOS concerning the potential commercial use of the S-band allotted to Devas and the potential terrestrial use of the S-band.⁷⁰
201. The Claimants invoke the standard articulated in the *Chorzow Factory* case for compensation,⁷¹ that is, to make reparation in an amount that would, "so far as possible, wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have

⁶⁹ See generally, Partial Award ¶ 142.

⁷⁰ Partial Award ¶ 132 and footnote 140.

⁷¹ **CL-102**, *Case Concerning the Factory at Chorzów (Claim for Indemnity) (Germany v. Poland)*, Permanent Court of International Justice, Judgment on the Merits, dated 13 September 1928, 17 PCIJ 4 (SERIES A) (1928) at p 29; and Claimants' Submission on Quantum ¶ 21 *ff.*

existed if that act had not been committed.”⁷² The Respondent objects to applying this standard and says the Tribunal “clearly held” that “the applicable standard to calculate compensation” in this case “is exclusively Article 6 of the Mauritius Treaty.”⁷³

202. The Respondent says that Article 6 provides only that compensation for expropriation “shall amount to the *market value* of the investment expropriated” which may be something less than the *fair market value* that might be potentially claimed under the *Chorzów Factory* standard.⁷⁴ Moreover, the Respondent says that the Tribunal did not make an express finding of unlawful conduct in the Partial Award and that such a finding would have been necessary in order to apply the *Chorzów Factory* standard.⁷⁵ Despite these submissions, the Respondent concedes, however, that the discussion about the compensation standard is purely academic in this case since even under the *Chorzów Factory* standard, the result would be the same.⁷⁶ Contrary, it says, to the Claimants’ arguments, the *Chorzów Factory* standard does not allow the Claimants to ignore any fact that negatively affects value. “Rather, it requires all factors, negative as well as positive that ‘in all probability’ would have been present must be taken into consideration.”⁷⁷ Several authorities are cited in support. Among others, India refers to *CDSE v. Costa Rica*,⁷⁸ *Phillips Petroleum v. Iran*,⁷⁹ and *Yukos v. Russia*.⁸⁰
203. In response, the Claimants pointed to findings in the Partial Award in relation to breaches of Articles 4(2) and 6 of the Treaty (governing fair and equitable treatment (“FET”) and expropriation, respectively), contending that these findings amounted to a finding of unlawful expropriation (as well as bad faith conduct in breach of the FET standard).⁸¹ The Claimants also

⁷² **CL-102**, *Case Concerning the Factory at Chorzów (Claim for Indemnity) (Germany v. Poland)*, Permanent Court of International Justice, Judgment on the Merits, dated 13 September 1928, 17 PCIJ 4 (SERIES A) (1928) at p 47.

⁷³ Respondent’s Rejoinder on Quantum ¶¶ 78-79 (emphasis added); and Partial Award ¶ 425.

⁷⁴ Respondent’s Rejoinder on Quantum ¶ 79.

⁷⁵ Respondent’s Rejoinder on Quantum ¶ 79.

⁷⁶ Respondent’s Rejoinder on Quantum ¶¶ 6-8, 58-59, 71 and 80.

⁷⁷ Respondent’s Rejoinder on Quantum ¶ 80; and **CL-102**, *Case Concerning the Factory at Chorzów (Claim for Indemnity) (Germany v. Poland)*, Permanent Court of International Justice, Judgment on the Merits, dated 13 September 1928, 17 PCIJ 4 (SERIES A) (1928) at p 47.

⁷⁸ *Compania del Desarrollo de Santa Elena, S.A. v. The Republic of Costa Rica*, ICSID Case No. ARB/96/1, Final Award, dated February 17, 2000, 15(1) ICSID REVIEW 169 (2000), ¶ 84.

⁷⁹ *Phillips Petroleum Company Iran v. The Islamic Republic of Iran and the National Iranian Oil Company*, Iran-U.S. Claims Tribunal Case No. 39, Award No. 425-39-2, dated June 29, 1989, 1989 WL 663903, ¶¶ 151, 153.

⁸⁰ *Yukos Universal Limited (Isle of Man) v. The Russian Federation*, UNCITRAL, PCA Case No. AA 227, Final Award, 18 July 2014, ¶¶ 1805, 1811.

⁸¹ Claimants’ Reply on Quantum ¶ 38.

argue that India has not disputed that, in principle, the relevant business asset should be valued based on its “highest and best use.”⁸²

204. The Claimants submitted that compensation is calculated in a “hypothetical context where the State would not have resorted to such maneuvers, but would have **fully** respected the provision of the treaty and the contract concerned.”⁸³ They say, therefore, that both the *Chorzów Factory* mandate and the principle of full reparation apply, including looking to the highest and best use of the property that has been taken.
205. The Tribunal finds that the debate over whether it must apply the concept of either market value or fair market value, as acknowledged by the Respondent, is really academic in this case. We should not overlook actions by the state that may have negatively affected the value of what was taken as a result of the decision of the CCS in February 2011. Put in affirmative terms, the Tribunal determines that it should apply the standard language of reparation as set out in the *Chorzów Factory* case. In particular, the Tribunal finds that the phrase, “market value” used in Article 6 of the Treaty does not preclude reliance on these well-recognized and standard descriptions of what should be determined when deciding quantum or value of what was, in this case, unlawfully taken without compensation at the time. Moreover, if it were necessary to do so, the Tribunal would affirm that Treaty breaches of FET and expropriating property without compensation were both unlawful actions for which the Claimants may seek full compensation.
206. The Tribunal will, therefore, review the issues raised in this quantum phase of the arbitration with the objective of finding an amount that will, “as far as possible, wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed.”⁸⁴
207. The Tribunal has read with great attention and respect the award in the *Deutsche Telekom AG v. The Republic of India* submitted by the Respondent on June 29, 2020. As will be seen below, based on its own analysis of the evidence and the pleadings of the Parties in this case, the Tribunal, by majority, has come to different conclusions.

⁸² Claimants’ Reply on Quantum ¶41.

⁸³ Claimants’ Reply on Quantum ¶39 and footnote 51; CL-2, *Azurix Corp. v. Argentina*, No. ARB/01/12, Award ¶ 417 (ICSID 2006).

⁸⁴ CL-102, *Case Concerning the Factory at Chorzów (Claim for Indemnity) (Germany v. Poland)*, Permanent Court of International Justice, Judgment on the Merits, dated 13 September 1928, 17 PCIJ 4 (SERIES A) (1928) at p 29.

V. APPLICABLE “BUT FOR” SCENARIO

208. The Tribunal will now consider which circumstances would have prevailed in the event that the unlawful conduct had not occurred. The Tribunal will address several defining features of the “but for” scenarios discussed by the Parties.
209. As was noted by the Tribunal in its letter to the Parties of November 13, 2017, the Parties’ discussion on the applicable “but for” scenario was based on the characterization of the damages claim by the Claimants and focused initially on the value of Devas in the hypothetical event that it had obtained only 40% of the originally allocated spectrum. In other words, the valuation concerns the value in early February 2011 of the Claimants’ investment in Devas, had that company been able to secure only 25.2 Mhz of spectrum. This “but for” scenario will be referred to as the “**Reduced Spectrum Scenario.**”
210. As will be seen below, the main areas of discussion between the Parties in the Reduced Spectrum Scenario concern the S-band spectrum distribution and satellite capacity allocation between the Parties; the impact of satellite launch delays on Devas’ value; and the likelihood of Devas obtaining, but for the decision to annul the Devas’ Agreement, the relevant regulatory approvals to operate its intended BWA and AV services, notably by being granted a terrestrial re-use license from the Wireless Planning and Coordination Wing (“**WPC**” and “**WPC License**,” respectively), against the payment of a fee to be established by the authorities.
211. By the same letter of November 13, 2017, the Tribunal requested the Parties to ask their experts to provide additional reports addressing an alternative valuation approach in which they would calculate the amount of 40% of the value of the investment as it was actually made by the Claimants, *i.e.* in consideration of all rights and obligations set out in the Devas Agreement including access to 63 Mhz of S-band spectrum. This “but for” scenario will be referred to as the “**Original Spectrum Scenario.**”
212. Furthermore, under both the Reduced Spectrum Scenario and the Original Spectrum Scenario, the Parties address two possible situations with regard to the services which Devas may have been able to provide: (i) the provision of both BWA and AV services; and (ii) the provision of AV services only. Whether both types or only one type of services was to be provided has a significant impact on the value of Devas, as will be apparent in the following sections.

A. REDUCED SPECTRUM SCENARIO

213. On the assumption that Devas would have to operate with a reduced spectrum, the Parties disagree on several aspects of the Reduced Spectrum Scenario, including: (i) the amount of spectrum entitlement and its division over one or two satellites; (ii) the satellite configuration and the impact of possible launch delays; (iii) regulatory risks; and (iv) applicable license fees. Finally, the Parties also discuss the value of an AV Services–only business in the Reduced Spectrum Scenario.

1. Spectrum Entitlement and Division

214. On the assumption that Devas would have to operate with a reduced spectrum, the Parties disagree as to the actual amount of spectrum entitlement as well as to how such spectrum would likely have been allocated and, in particular, whether it was reasonable to assume that the entirety of the spectrum would have been allocated on one and the same satellite.

a. Contiguous 25.2 MHz Spectrum Allocation to Devas in One Satellite

215. The Claimants argue that in a “but for” world Devas would have had 25.2 MHz of downlink spectrum available instead of the 70 MHz originally envisaged (of which 7 MHz had already been reserved for use by the Indian Space Research Organization (“ISRO”))⁸⁵ and 0.2 MHz of uplink spectrum.⁸⁶

216. The 25.2 MHz of available spectrum for Devas in the Claimants’ “but for” scenario is the product of multiplying the 63 MHz of spectrum which were originally envisaged for Devas’ use by 40%,⁸⁷ which is the extent of spectrum which, on the Claimants’ interpretation, was regarded by the Tribunal in the Award on Jurisdiction and Merits to have been expropriated for purposes other than the protection of India’s essential security interests.⁸⁸

217. The Claimants argue that in such a scenario Devas would have:

(a) reconfigured one of the two Satellites (and not used the other), and (b) worked with new

⁸⁵ Claimants’ Submission on Quantum ¶ 8; see also Third Witness Statement of Gary Parsons, dated January 13, 2017 (hereinafter, “Parsons III”) ¶ 11. The Claimants affirmed at the Hearing on Quantum that they considered their estimation of 25.2 Mhz of spectrum available to Devas under the Reduced Spectrum Scenario to be “a conservative number” because their view is that “there are actually circumstances where the proper approach is 60 percent of 70 MHz, not 60 percent of 63 MHz.” (Hearing Transcript, Day 1, p. 53:23-25). See also Hearing Transcript, Day 6, pp. 1541:21-1542:1.

⁸⁶ Claimants’ Submission on Quantum ¶ 75.

⁸⁷ Claimants’ Submission on Quantum, footnote 19.

⁸⁸ Claimants’ Submission on Quantum ¶ 7.

technology for its ground network to maximally use the 25.2 MHz of spectrum available (...) with these technology changes, having 25.2 MHz of spectrum would not have materially affected Devas's ability to deliver BWA and AV services in the urban areas in India (...) from where the vast bulk of its revenues were to be generated.⁸⁹ [footnotes omitted]

218. In contrast, in the less-profitable rural areas Devas would not have built a terrestrial BWA network and would offer a reduced package of AV services.⁹⁰ This would have only had a minor impact on Devas' revenues which were largely generated from customers in urban zones.⁹¹
219. The Respondent, on the other hand, considers that the Claimants engage in a distorted analysis of the available spectrum and propose a satellite configuration that would deprive the Government of the effective use of the limited spectrum that the Tribunal had determined it would need for its essential security interests.⁹²
220. The Respondent contends that the spectrum split is not just a "mathematical matter," as not all of the spectrum on each of the transponders is "usable" and it is necessary to have unused "guard band" spectrum to assure the realisation of the satellite payload systems.⁹³ By not taking this into account, the Respondent argues, the Claimants have overstated their spectrum entitlement.⁹⁴
221. Moreover, the Respondent also disagrees with the way in which the split is put forward by the Claimants, which assume a contiguous allocation and the use of one satellite only. This would leave the Government with the entirety of the second satellite and only a small portion of the first one. The split envisaged by the Claimants would thus have an adverse impact on India's ability to protect its essential security interests.⁹⁵

⁸⁹ Claimants' Submission on Quantum ¶ 8; see also Parsons III ¶¶ 14-15.

⁹⁰ Claimants' Submission on Quantum ¶ 76; see also Expert Report of Dr. Coleman Bazelon, dated January 16, 2017 (hereinafter, "**Bazelon I**") ¶¶ 17, 53, 70; Parsons III ¶ 30.

⁹¹ Claimants' Submission on Quantum ¶ 76; Hearing Transcript, Day 1, p. 55:20-24.

⁹² Respondent's Counter-Memorial on Quantum ¶ 28.

⁹³ Respondent's Counter-Memorial on Quantum ¶¶ 31-32 (including two tables describing the usable available spectrum to Devas and the Government on each of the transponders in the initially envisaged scenario and in the spectrum reduced scenario); see also Ex. **R-1** (Devas Contract) Exhibit A, Tables 2.1.1(a) and 2.1.1(b); and Direct Testimony of Mr. K. S. Parikh, dated May 15, 2017 (hereinafter, "**Parikh I**") ¶ 4.

⁹⁴ Respondent's Counter-Memorial on Quantum ¶ 32.

⁹⁵ Respondent's Counter-Memorial on Quantum ¶ 33; see also Parikh I ¶¶ 11-12.

222. The Respondent claims that Devas would not be viable as a company with the reduced spectrum, and that the Claimants' preferred configuration is designed to make Devas viable at the expense of India's essential security interests.⁹⁶

b. Non-contiguous 19.44 MHz Spectrum Allocation to Devas Divided in Both Satellites

223. The Respondent argues that Devas would at most have had use of 19.44 MHz of downlink spectrum and 2.916 MHz of uplink.⁹⁷ Furthermore, as the Tribunal found that 60% of the spectrum was to be allocated for India's essential security interests, the "Claimants cannot now assert that the Government would have been required to deploy that spectrum in a manner that best suited Devas' commercial needs."⁹⁸
224. The Respondent affirms that with a spectrum split and satellite configuration consistent with its essential security interests, Devas would have been left with "non-contiguous spectrum, usable with only smaller channel sizes supported by the LTE standard (...) that would have limited Devas' service offerings."⁹⁹ The Respondent endorses the conclusion of its technical expert, Mr. Sharony (hereafter, "**Mr. Sharony**") that this would have had a negative impact on Devas' ability to compete effectively."¹⁰⁰
225. On the other hand, the Claimants' experts consider that the Respondent's proposed distribution of the spectrum "would be so grossly inefficient as to be perverse (...) the only discernable (sic) "rationale" for Mr. Parikh's suggested satellite configuration and use of S-band spectrum is that it depresses Devas's value."¹⁰¹ Mr. Parikh is the Deputy Director of the Satellite Communication and Navigation Payload Area of the Space Application Center (ISRO) and his testimony has been submitted by the Respondent ("**Mr. Parikh**"). Furthermore, the Claimants contend:

Mr. Parikh's assumptions about bandwidth and channels, and guard bands also would result in large amounts of empty, unused spectrum and would clearly hamper India's use of the S-band for military needs. These arguments are manifestly implausible, and therefore cannot

⁹⁶ Respondent's Rejoinder on Quantum ¶ 58; see also Second Technical Report of Dr. Jacob Sharony, dated October 20, 2017 (hereinafter, "**Sharony II**") ¶ 38.

⁹⁷ Respondent's Counter-Memorial on Quantum ¶ 32; see also Parikh I ¶ 7.

⁹⁸ Respondent's Rejoinder on Quantum ¶ 59.

⁹⁹ Respondent's Counter-Memorial on Quantum ¶ 35; see also Technical Report of Dr. Jacob Sharony, dated May 15, 2017 (hereinafter, "**Sharony I**") ¶¶ 16-33.

¹⁰⁰ Respondent's Counter-Memorial on Quantum ¶ 35; quoting Sharony I ¶ 10.

¹⁰¹ Claimants' Reply on Quantum ¶ 13; see also Fourth Witness Statement of Gary Parsons, dated July 31, 2017 (hereinafter, "**Parsons IV**") ¶¶ 6-8, 18-27; Hearing Transcript, Day 1, p. 57:12-23, p. 63:11-20; Day 6, p. 1595:11-13.

be accepted for valuation purposes.¹⁰²

2. Technical Risks

226. On the assumption that Devas would have to operate with a reduced spectrum, the Parties disagree with regard to the technical risks that Devas' business would face.

a. Satellite Configuration and Launch Delays

227. The Parties are in disagreement as to whether it was reasonable to assume that Devas would have been able to use one or two of the satellites. As a result, they take different views as to launch delays that Devas would have to factor in before being provided with satellite capacity.

i. One Dedicated Satellite for Devas Unimpeded by Delays

228. The Claimants contend that Devas would have had the right under the Devas Agreement to delivery of two satellites, which were almost complete by June/July 2010¹⁰³ and were to be launched by mid-July 2011.¹⁰⁴ Devas would have used either of those satellites.¹⁰⁵ In this regard, the Claimants argue that the Award on Jurisdiction and Merits did not rule that the satellites GSAT-6 or 6A were needed for military use.¹⁰⁶ They consider that in a situation where India acted reasonably there would have been no reason why such a satellite could not have been launched for Devas in 2011.¹⁰⁷

229. The Claimants affirm that in a "but for" world "Devas would *not* be tethered to the two-satellite configuration proposed by India."¹⁰⁸ [emphasis in original] Moreover, the Claimants consider that, since the satellite that would be dedicated for Devas' use "would not involve the military, it would not have been subject to any delays or refits associated with the military or the purported need to launch the satellite using an Indian GSLV."¹⁰⁹

¹⁰² Claimants' Reply on Quantum ¶ 15.

¹⁰³ Hearing Transcript, Day 6, p. 1537:12-16.

¹⁰⁴ Claimants' Reply on Quantum ¶ 60; see Parsons III ¶ 22.

¹⁰⁵ The Claimants described at the Hearing on Quantum different ways in which Devas could have used the spectrum available to it under the Reduced Spectrum Scenario, see Hearing Transcript, Day 1, pp. 60:12-62:14.

¹⁰⁶ Hearing Transcript, Day 1, p. 61:7-22.

¹⁰⁷ Claimants' Reply on Quantum ¶ 69.

¹⁰⁸ Claimants' Reply on Quantum ¶ 70. See also Hearing Transcript, Day 1, p. 57:8-12.

¹⁰⁹ Claimants' Reply on Quantum ¶ 70.

230. The Claimants also assert that in a “but for” world Antrix would have complied with its contractual obligation to launch the satellites promptly.¹¹⁰ In any event, Devas had already taken the initiative to identify a third-party launch vehicle to cover for any contingency.¹¹¹ They further point out that “India itself uses foreign-made launch vehicles in practice. As Mr. Sethuraman admits, India’s last military satellite, GSAT-7, was *not* launched using the GSLV or any other Indian vehicle.”¹¹² [emphasis in original] Mr. Sethuraman is Associate Director, Satellite Communication Program at the Satellite Communication and Navigation Program Office (ISRO); his testimony has been submitted by the Respondent (“**Mr. Sethuraman**”). In fact, the launch was carried out by a European consortium, as reported by Indian press: “India’s first exclusive defence satellite GSAT-7 was successfully launched by European space consortium, Arianespace’s Ariane 5 rocket from Kourou spaceport in French Guiana.”¹¹³

231. The Claimants further argue:

In all events, even had there been some delay in launching a satellite that would allow Devas to start offering services, this would not have affected the basic viability of the business because, as Claimants have shown, they would fully have met that challenge in a manner that preserved its business, *e.g.* by accelerating the roll-out of its services to make up for any delay, to ensure that its rollout was not impaired.¹¹⁴

232. In contrast, the Respondent argues that the spectrum split put forward by the Claimants would leave the Government with very limited capacity in one satellite which the Respondent considers as a “grave risk if Satellite 2 were to fail.”¹¹⁵

233. The Respondent explains that “the Government has a 24 x 7 operational philosophy for its military satellites, meaning that, in order to assure that the military requirements are covered at all times, two operational satellites in the same service are necessary.”¹¹⁶

¹¹⁰ Claimants’ Reply on Quantum ¶ 76.

¹¹¹ Claimants’ Reply on Quantum ¶ 71.

¹¹² Claimants’ Reply on Quantum ¶ 72; see also Second Supplemental Direct Testimony of Mr. K. Sethuraman, dated May 15, 2017 (hereinafter, “**Sethuraman III**”), App. A n.3.

¹¹³ Claimants’ Reply on Quantum ¶ 72, quoting Ex. C-255, *India’s First Defence Satellite GSAT-7 Launched Successfully*, Times of India, August 30, 2013.

¹¹⁴ Claimants’ Reply on Quantum ¶ 73; Parsons IV ¶ 34.

¹¹⁵ Respondent’s Counter-Memorial on Quantum ¶ 34.

¹¹⁶ Respondent’s Counter-Memorial on Quantum ¶ 34.

ii. Shared Satellites to Be Launched with Indian Autochthonous Technology

234. The Respondent argues that it needs access to both satellites, such that if one satellite were to fail, the Government would at least have some coverage for its essential security interests.¹¹⁷ Pursuant to the Respondent's proposal, the Government would have at least two satellites covering the same area and, "while such a spectrum split and satellite configuration would not have been optimal for Devas, the Government's essential security interests should not be compromised in order to accommodate Devas' entertainment business."¹¹⁸
235. The Respondent contends that, while the Claimants' proposal gives no consideration at all to the Government's essential security interests,¹¹⁹ the Respondent's proposed shared satellite configuration gives additional capacity to the Government and meets its load sharing requirements. The Respondent's approach is therefore superior to the Claimants' proposals, which the Respondent regards as based on the erroneous premise that the Claimants are entitled to define the satellite configuration in a manner that "assur[es] it the maximum benefit irrespective of the Government's essential security interests."¹²⁰
236. In the Claimants' view, "[t]here is no credible evidence that India does, in fact, approach military satellites in that fashion" and, in any event, it would be "irrelevant to the outcome of this issue."¹²¹ The Claimants also contend that "every satellite has internal redundancy built into it so that if a transponder malfunctions, coverage is not lost. Because satellites are constructed this way, there is rarely total in-orbit failure of a satellite. India's claimed "risk" of total in-orbit failure is greatly overstated."¹²² Moreover, according to Mr. Gary Parsons, engineer Member of the Board of Directors and shareholder of Devas, whose witness testimony has been submitted by the Claimants ("**Mr. Parsons**"), it is uncommon for militaries worldwide to operate a redundant satellite. He points out:

[N]one of the last three satellites that India claims were for military use have in-orbit operational back-ups nor has India launched two complementary satellites in order to "diversify" its risk of in-orbit failure. Indeed, in the two years since GSAT-6 was launched, and despite its claims of an alleged "grave risk" in not having a second satellite in orbit, India

¹¹⁷ Respondent's Counter-Memorial on Quantum ¶ 36.

¹¹⁸ Respondent's Counter-Memorial on Quantum ¶ 36.

¹¹⁹ Respondent's Counter-Memorial on Quantum ¶ 35.

¹²⁰ Respondent's Rejoinder on Quantum ¶ 69.

¹²¹ Hearing Transcript, Day 1, p. 58:8-11.

¹²² Claimants' Reply on Quantum ¶ 64; Parsons IV ¶ 13.

has *not* launched GSAT-6A, as a back-up or otherwise.¹²³ [footnotes omitted]

237. The Respondent addresses these assertions by stating that the Claimants do not comprehend the difference between load sharing and redundancy;¹²⁴ while satellites have some internal redundancy, it relates to specific components only (those with higher failure rates). Satellites do not have redundant transponders, nor does the unfurlable antenna (the failure of which would render the satellite useless) have any redundancy.¹²⁵ Furthermore, even if redundant components may remedy many potential failures, “the problems associated with the inability to load share that are inherent in the dedicated satellite configuration would remain.”¹²⁶
238. Regarding the lack of back-ups, the Respondent claims that its plan was to develop experience prior to launching satellite GSAT-6A, which was scheduled for December 2017 or January 2018.¹²⁷
239. According to the Respondent, in a “but for” world both satellites would have been reconfigured to be used by the military and they would have required to have been launched using India’s indigenously developed launch technology.¹²⁸ Despite the Claimants’ denial of relevant launch delays, the Respondent considers them inevitable to make possible:

the Government’s reconfiguration of the satellites for dual military/commercial usage, the Government’s assessment of the causes for the GSLV launch failures, its development of solutions and the testing of the modified launch equipment, and the Government’s need to develop ground systems (including handheld devices) that were compatible with the S-band satellite signals.¹²⁹

240. The Respondent points out that satellite GSAT-6 was launched by ISRO on August 27, 2015,¹³⁰ and that there is no reason to believe that the delay would have been significantly different had the Government been limited to 60% of the capacity of the satellites rather than 100%.¹³¹

¹²³ Claimants’ Reply on Quantum ¶ 65.

¹²⁴ Respondent’s Rejoinder on Quantum ¶ 61.

¹²⁵ Respondent’s Rejoinder on Quantum ¶ 64.

¹²⁶ Respondent’s Rejoinder on Quantum ¶ 64.

¹²⁷ Respondent’s Rejoinder on Quantum ¶ 67. By letter dated April 10, 2018, the Respondent informed the Tribunal that GSAT-6A had been launched on March 29, 2018 and had encountered technical problems immediately after launch. See also Hearing Transcript, Day 1, p. 81:12-18

¹²⁸ Respondent’s Counter-Memorial on Quantum ¶ 38.

¹²⁹ Respondent’s Rejoinder on Quantum ¶ 71.

¹³⁰ Respondent’s Counter-Memorial on Quantum ¶ 46.

¹³¹ Respondent’s Counter-Memorial on Quantum ¶ 48.

241. The Respondent also affirms that Devas had no right under the contract to obtain a third-party launch vehicle, despite the Claimants' assertions that Devas had already taken the initiative to find such a third-party.¹³² The Respondent affirms that "GSAT-6 and GSAT-6A, unlike GSAT-7, are not ordinary communication satellites. Rather, they contain India's state-of-the-art unfurlable antenna" and India was not prepared to share these advanced and unique features with any third-party launcher.¹³³
242. The Respondent criticizes the Claimants' assertion that any delay would have been mitigated "by accelerating the roll-out of its services to make up for any delay"¹³⁴ as a bold statement without any evidence to support the feasibility of such acceleration.¹³⁵ The Respondent argues that if an acceleration of services roll-out was possible, it would have been done in any event, since Devas was to generate negative cash flows for nine years according to the Claimants' experts.¹³⁶
243. The Respondent discards the Claimants' statement that Antrix was contractually obligated to launch satellites promptly, as Antrix could not have launched the satellite if the Government refused to permit it to be launched by a third-party in light of its essential security interests.¹³⁷ Furthermore, even assuming that Antrix's delay could not be excused as *force majeure*, the maximum amount it would be required to pay for delay would have been USD 5 million. In the event of material breach, Devas was entitled to terminate the contract and to obtain the refund of the Upfront Capacity Reservation Fees, but nothing more.¹³⁸
244. The Respondent contends that a reasonably informed buyer in February 2011 would have known that a delay in the launch would have had an adverse effect on value. A shift of the launch date to July 2014, without any other change in the Claimants' model, would have decreased their DCF valuation from USD 1,284 million to USD 68.9 million, while a delay to July 2015 (which roughly

¹³² Respondent's Rejoinder on Quantum, footnote 194; see also Supplemental Direct Testimony of Mr. K. S. Parikh, dated October 19, 2017 (hereinafter, "**Parikh II**"), n. 15.

¹³³ Respondent's Rejoinder on Quantum ¶ 73; *cf.* Claimants' Reply on Quantum ¶ 72; see also Third Supplemental Direct Testimony of Mr. K. Sethuraman, dated October 19, 2017 (hereinafter, "**Sethuraman IV**"), App. A n. 3.

¹³⁴ Respondent's Rejoinder on Quantum ¶ 74.

¹³⁵ Respondent's Rejoinder on Quantum ¶ 74.

¹³⁶ Respondent's Rejoinder on Quantum ¶ 74. See also Hearing Transcript, Day 1, p. 86 :8-17.

¹³⁷ Respondent's Rejoinder on Quantum ¶ 76.

¹³⁸ Respondent's Rejoinder on Quantum ¶ 76; see also Ex. **R-1** (Devas Contract) Exhibit B ¶ 2.1.2.2.

coincides with the actual launch date of GSAT-6) would further reduce it to negative USD 234.9 million.¹³⁹

iii. One Satellite Dedicated to Devas Still Affected by Launch Delays

245. The Respondent claims that, even if Devas had been given a dedicated satellite as assumed by the Claimants (which for the reasons set out above would have been contrary to India's essential security interests), such satellite would have still needed to be reconfigured to function with a reduced spectrum. In this regard, the Respondent claims that the nine-month period which the Claimants allow for such reconfiguration is "overly simplistic."¹⁴⁰ According to Mr. Parikh "the procurement, installation and testing of the new payload would have taken between 15 and 21 months."¹⁴¹
246. Moreover, the Respondent submits that regardless of when such reconfiguration may have been finished, the "satellite would have had to have been launched from India by an indigenous Indian satellite under the watchful eye of ISRO and Indian security forces, not by a third-party."¹⁴² The Respondent suggests:

[O]nce it had been determined to use a satellite with India's state-of-the-art unfurlable antenna for the Government's essential security interests, an identical satellite would not have been permitted to have been launched with a foreign launch vehicle.¹⁴³

b. **Technical Challenges**

247. The Parties are in disagreement with regard to the feasibility of certain technical assumptions and the impact that technical challenges would have over the viability of Devas' business. In particular, the Respondent challenges the feasibility of the technologies which the Claimants envisage would have been used in the Reduced Spectrum Scenario and the competitiveness of the Devas' business with the assumed download speed and "oversubscription ratio."

i. Novel Technologies (LTE, DVB-SH and eMBMS)

248. The Claimants argue that the technology adaptations required for Devas to develop its business in the Reduced Spectrum Scenario would involve the use of LTE technology and an efficient cell

¹³⁹ Respondent's Rejoinder on Quantum ¶ 77; see also Second Expert Report of Dr. Daniel Flores of Econ One Research, dated October 20, 2017 (hereinafter, "**Flores II**"), Table 5. See also Hearing Transcript, Day 1, p. 116:4-8.

¹⁴⁰ Hearing Transcript, Day 6, p. 1589:8-9, referring to Parikh II, footnote 21.

¹⁴¹ Hearing Transcript, Day 6, p. 1589:8-11, referring to Parikh II, footnote 21.

¹⁴² Respondent's Rejoinder on Quantum ¶ 73; see also Parikh II, n. 15; Sethuraman IV ¶ 2.

¹⁴³ Respondent's Rejoinder on Quantum ¶ 11.

site configuration, which would result in higher cell capacity and reduced network costs; the use of a 20 MHz channel for BWA services (in contrast with the three 10 MHz channels previously envisaged); and the merging of Devas' terrestrial network for AV and BWA services into a single terrestrial network using "eMBMS" technology, which would result in significant cost savings.¹⁴⁴

249. According to the Claimants, LTE and DVB-SH technologies were in their infancy and required "an appropriate ecosystem" which, the Claimants submit, "was being accelerated for Devas" with DT's assistance.¹⁴⁵ The Claimants also point out that Mr. Sharony opined that TD LTE technology "would be available in India in 2012, which is consistent with the valuation evidence."¹⁴⁶
250. With regard to eMBMS technology, in the Claimants' view, the introduction of such technology was feasible as at the valuation date, as is illustrated "by the fact that DT, Devas and Alcatel Lucent were actively engaged in developing eMBMS for use by Devas at the time the contract was annulled."¹⁴⁷ The Claimants consider that Mr. Sharony does not question its viability from a technical perspective but rather "complains" that it was not commercially deployed until 2014.¹⁴⁸ Nevertheless, the Claimants consider that Mr. Larsen's evidence that "there was a commercial case for eMBMS with Devas and that, before annulment, DT was driving its development" remains "unchallenged."¹⁴⁹
251. The Respondent contests the availability as of February 2011 of the technology relied on by the Claimants in order to develop the technological arrangements required in the "Reduced Spectrum Scenario," noting that "as of February 2011, no TD-LTE network had been commercially deployed anywhere in the world."¹⁵⁰ The Respondent points out that TD-LTE was deployed in India for the first time in April 2012 by one of the giants of the Indian telecommunications

¹⁴⁴ Claimants' Submission on Quantum ¶ 75; see also Bazelon I ¶¶ 28, 87; Hearing Transcript, Day 1, p. 49:10-16.

¹⁴⁵ Hearing Transcript, Day 6, pp.1534:22-1535:7; Claimants' Closing Presentation, slide 23.

¹⁴⁶ Hearing Transcript, Day 6, p.1535:8-12; p. 1594:17-21. See also, Claimants' Closing Presentation, slide 102.

¹⁴⁷ Claimants' Reply on Quantum ¶ 80; referring to Parsons III ¶¶ 26-28; Parsons IV ¶¶ 48-51; Reply Witness Statement of Dr. Kim Kylesbech Larsen, dated 28 July 2017 (hereinafter, "**Larsen II**") ¶¶ 24-29. See also Hearing Transcript, Day 1, p. 55:1-8; Day 6, pp. 1594:9-14; pp. 1700:19-1701:4; Claimants' Closing Presentation, slide 102.

¹⁴⁸ Claimants' Closing Presentation, slide 102; referring to Sharony II ¶ 10.

¹⁴⁹ Claimants' Closing Presentation, slide 102.

¹⁵⁰ Respondent's Counter-Memorial on Quantum ¶ 63: "That technology would have posed a greater risk since as of February 2011, no TD-LTE network had been commercially deployed anywhere in the world. Further, because of the immaturity of the technology, the availability of affordable, compatible devices for the Devas customers was not assured."

market.¹⁵¹ Accordingly, the Respondent considers that the “Claimants’ assumption that they could have rolled out commercial services using TD-LTE combined with e-MBMS technologies as of January 2012 is totally unsupported.”¹⁵²

252. According to the Respondent, “most of the telecommunication giants considered the business case for eMBMS still not proven in 2016 (...) It is still not clear today whether it is commercially viable. DT hasn’t rolled it out commercially anywhere.”¹⁵³ In any event, the Respondent argues that “the record shows that it would not have been ready for use by Devas until 2014 at the earliest.”¹⁵⁴

ii. Download Speed

253. The Respondent criticizes that the Claimants have updated the download speeds for BWA services assumed in the Darwin Model to meet the requirements for broadband services recommended by the Telecom Regulatory Authority of India (“**TRAI**”) for 2011, but have not also assumed that they would have to grow at a higher rate than envisaged in the Darwin Model in order to reach the download speed recommended by TRAI for 2016.¹⁵⁵ In the Respondent’s view, this means that “without adjustment, Devas would have had a manifestly uncompetitive business.”¹⁵⁶ According to the Respondent, if the costs necessary to achieve that were included in the Claimants’ model, “the value calculated by Claimants’ experts would be entirely eviscerated.”¹⁵⁷

¹⁵¹ Respondent’s Rejoinder on Quantum ¶ 98.

¹⁵² Respondent’s Rejoinder on Quantum ¶ 98.

¹⁵³ Hearing Transcript, Day 6, p. 1682:12-17. See also, Hearing Transcript, Day 1, pp. 116:20-117:6; Day 6, pp. 1681:10-1682:24; p. 1683:19-23.

¹⁵⁴ Hearing Transcript, Day 1, p. 117:4-6.

¹⁵⁵ Respondent’s Counter-Memorial on Quantum ¶ 51; Flores I ¶¶ 330-338. See also Hearing Transcript, Day 6, pp. 1646:2-1647:25; p. 1685:7-11.

¹⁵⁶ Respondent’s Rejoinder on Quantum ¶ 99; referring to Flores I ¶¶ 335-336; Flores II ¶ 333; **App. EO-114**, Letter from the Telecom Regulatory Authority of India to the Secretary of the Department of Telecommunications dated 4 May 2011, with attachments, pp. 3-4; **App. EO-115**, Telecom Regulatory Authority of India, “Recommendations on National Broadband Plan,” 8 December 2010, pp. ii, 62, 122. See also, Hearing Transcript, Day 1, pp. 113:5-114:4.

¹⁵⁷ Respondent’s Counter-Memorial on Quantum ¶ 51; Flores I ¶ 338. See also, Respondent’s Opening Presentation, slide 38; and Hearing Transcript, Day 6, pp. 1646:2-1647:25; p. 1685:7-11.

254. Moreover, the Respondent contends that the “[a]ctual download speeds for BWA services in India demonstrate that Devas would have been uncompetitive had it achieved the speeds based on the growth rates assumed by Claimants’ experts.”¹⁵⁸ In the Respondent’s view,

Devas could not reasonably expect to offset the costs associated with increasing download speeds with an increase in the price of the services, as the large Indian companies that are offering BWA services are actually charging prices that are lower than prices that Claimants’ experts are projecting for Devas[.]¹⁵⁹

255. In response, the Claimants argue that Mr. Flores’ criticism relies “on a single *comment* to a series of *comments* on proposed guidelines, and the comment he relies on was not adopted for several years after it was first made (in different market circumstances).”¹⁶⁰ [emphasis in original] The Claimants also underscore that Mr. Bazelon met the “*actual* bandwidth requirements in 2011” [emphasis in original], and that the document on which –Mr. Flores relies “deals with service in rural villages and acknowledges that as of 2011 3G and BWA systems may support lesser bandwidth.”¹⁶¹
256. The Claimants contend that Mr. Flores refers to speeds obtained by other operators after the valuation date “but notably does not mention the substantial reduction in the costs of providing bandwidth (...) that occurred in the same period to support those increased speeds.”¹⁶² According to the Claimants, Mr. Bazelon’s examination at the Hearing on Quantum “dispel[ed] any doubt that the projected download speeds contained in the TRAI recommendation are not a reasonable basis for reducing value or adjusting the cash flows.”¹⁶³

iii. “Oversubscription Ratio”

257. The “oversubscription ratio” reflects the number of broadband customers which have access to the same bandwidth at any particular time.¹⁶⁴ The Respondent criticizes that the Claimants have

¹⁵⁸ Respondent’s Counter-Memorial on Quantum, footnote 125; referring to, *inter alia*, **App. EO-117**, Cisco, “VNI Mobile Forecast Highlights, 2013-2018,” p. 2; **App. EO-118**, Cisco, “VNI Mobile Forecast Highlights, 2016-2021,” p. 2. See also, Respondent’s Rejoinder on Quantum ¶ 99; Hearing Transcript, Day 6, p. 1647:15-22; pp. 1684:22-1685:6.

¹⁵⁹ Respondent’s Counter-Memorial on Quantum, footnote 125; referring to Flores I ¶¶ 339-343. See also, Respondent’s Opening Presentation, slide 39; Hearing Transcript, Day 6, p. 1646:2-19; p. 1648:8-23.

¹⁶⁰ Claimants’ Reply on Quantum ¶ 159; Reply Expert Report of Dr. Coleman Bazelon, dated July 31, 2017 (hereinafter, “**Bazelon II**”) ¶¶ 160-166.

¹⁶¹ Claimants’ Reply on Quantum ¶ 159; Bazelon II ¶¶ 160-166.

¹⁶² Claimants’ Reply on Quantum ¶ 159; Bazelon II ¶¶ 160-166.

¹⁶³ Hearing Transcript, Day 6, p. 1607:16-22; Claimants’ Closing Presentation, slide 131.

¹⁶⁴ Respondent’s Counter-Memorial on Quantum ¶ 51; Respondent’s Rejoinder on Quantum ¶ 100; Claimants’ Reply on Quantum ¶ 159.

assumed a 50:1 “oversubscription ratio” which, the Respondent submits, is too high given that in 2009 the TRAI issued guidelines limiting the oversubscription ratio for enterprise customers to 30:1 in order to ensure a higher service quality.¹⁶⁵ The Respondent notes that Devas’ expert in the ICC Arbitration adjusted the oversubscription ratio in the Darwin Model to follow TRAI’s guidance, while the Claimants have not done so.¹⁶⁶

258. According to the Respondent, if the 30:1 ratio were applied to Devas’ enterprise customers following the TRAI guidance, “the costs in the Devas model would have to be adjusted upward, having another significant negative impact on net present value.”¹⁶⁷ Furthermore, the Respondent underscores that the prices used by the Claimants’ experts

are actually 69% higher than the prices Devas had in its own model. If one were to use the 30 to 1 oversubscription ratio together with the prices in the Devas model and leave all of Claimants’ other untenable assumptions intact, the Devas business would have a net present value of negative US\$104.5 million.¹⁶⁸ [footnotes omitted]

259. In contrast, the Claimants are of the view that, “even assuming that the Indian regulator would enforce uneconomic oversubscription factors on all operators,” the costs which Devas would have had to incur to meet a 30:1 oversubscription ratio for enterprise users “would have been wholly mitigated by a moderate 6.6% increase in prices to those enterprise users, which appears more than achievable because quality would increase as well.”¹⁶⁹ According to the Claimants, even if Devas were to raise its prices by 9.1% or 9.2% to offset such additional costs, its business would still be competitive, as it could command a higher price.¹⁷⁰
260. The Respondent disputes the assertion that the Claimants could have avoided this issue merely by increasing their prices and without any adverse market consequences.¹⁷¹

¹⁶⁵ Respondent’s Counter-Memorial on Quantum ¶ 51; referring to Flores I ¶¶ 344-346; **App. EO-127**, Telecom Regulatory Authority of India, “Guidelines for service providers providing Internet/broadband services for ensuring better quality of service,” 2 March 2009; Respondent’s Rejoinder on Quantum ¶ 100; Flores II ¶¶ 350-351. See also Hearing Transcript, Day 6, pp. 1685:24-1688:9.

¹⁶⁶ Respondent’s Rejoinder on Quantum ¶ 100; Flores II ¶¶ 354-355, Figure 14. See also, Hearing Transcript, Day 1, pp. 114:14-115:1; Day 6, p. 1686:5-11.

¹⁶⁷ Respondent’s Rejoinder on Quantum ¶ 100. See also, Respondent’s Counter-Memorial on Quantum ¶ 51; Flores I ¶ 346; Respondent’s Opening Presentation, slide 40.

¹⁶⁸ Respondent’s Rejoinder on Quantum ¶ 100; Flores II ¶¶ 354-355; Respondent’s Opening Presentation, slide 40; Hearing Transcript, Day 1, p. 117:14-21.

¹⁶⁹ Claimants’ Reply on Quantum ¶ 159; Bazelon II ¶¶ 167-170.

¹⁷⁰ Claimants’ Closing Presentation, slide 132.

¹⁷¹ Hearing Transcript, Day 1, p. 115:2-12.

3. Regulatory Risks

261. The Parties disagree as to whether Devas would have obtained the necessary licenses to actually provide all the BWA and AV services which it envisaged to develop.

a. Obtainment of WPC License for Terrestrial Re-use of Spectrum

262. The Claimants note that Devas had received Internet Service Provider (“ISP”) and Internet Protocol Television (“IPTV”) licenses which enabled it to roll-out satellite-only line of sight services without the need of obtaining any further licenses.¹⁷² The Claimants underscore that the Tribunal found in the Award on Jurisdiction and Merits that Devas had a right to deliver line of sight services without requiring any further license from the WPC and stress that “this is *res judicata* in these proceedings. It is thus inappropriate, and legally irrelevant, for India to try to re-open the debate on this subject.”¹⁷³

263. However, the Claimants acknowledge that for Devas to have been able to deliver the full suite of BWA and AV services envisaged in its most recent business model, “it would have required a WPC operating license authorizing it to re-use its satellite spectrum terrestrially.”¹⁷⁴ The Claimants affirm that they demonstrated during the merits hearing that

Devas had finalized a draft WPC application for its AV/BWA business with the input of high-level Antrix/ISRO representatives and was prepared to submit the application as soon as it received a firm launch date from ISRO, a prerequisite for submission.¹⁷⁵

264. The Claimants refer to the Tribunal’s holding in the Award on Jurisdiction and Merits that “because of problems of interference, [it] would not have been possible for competing services to operate in the same spectrum,”¹⁷⁶ as the spectrum was allocated to Devas. The Claimants interpret this finding as recognition that Devas possessed a “box-out” position with respect to its spectrum that prevented any other commercial operator from using it.¹⁷⁷ Furthermore, they affirm that this

¹⁷² Claimants’ Submission on Quantum ¶ 5; Claimants’ Reply on Quantum, footnote 14.

¹⁷³ Claimants’ Reply on Quantum, footnote 14; Hearing Transcript, Day 6, p. 1538:4-13; *cf.* Hearing Transcript, Day 1, p. 107:5-9: [Mr. Kahale] “although you did mention in passing in the partial award that you thought a satellite only business did not require a licence, I’m afraid that is incorrect as a matter of Indian law, as the DT witnesses have unequivocally confirmed.”

¹⁷⁴ Claimants’ Reply on Quantum ¶ 16 and Award on Jurisdiction and Merits ¶ 209.

¹⁷⁵ Claimants’ Reply on Quantum ¶ 94.

¹⁷⁶ Claimants’ Reply on Quantum, footnote 17.

¹⁷⁷ Claimants’ Reply on Quantum ¶ 18(d).

finding is *res judicata*, so the Respondent's efforts to re-open the debate in this regard are inappropriate.¹⁷⁸

265. The Claimants point out that a similar finding by the tribunal in the ICC Arbitration (the “**ICC Tribunal**”) led that tribunal to conclude that this situation, which prevented the auctioning of the spectrum, incentivized any regulator to reach an agreement with Devas on reasonable licensing fees.¹⁷⁹
266. They also assert that these circumstances have led authorities, in every other jurisdiction where this issue has emerged, to deal exclusively with the holder of satellite spectrum.¹⁸⁰ In this context, they submit that Devas had every reason to expect, and India every reason to grant, a full terrestrial re-use license allowing Devas to provide AV and BWA services throughout India at a reasonable fee.¹⁸¹
267. Moreover, the Claimants point out that in 2009 India granted Devas all necessary licenses to develop experimental trials to conduct a full AV/BWA Business with terrestrial re-use, including not only the experimental license¹⁸² but also a license to import wireless transmitting and receiving apparatus into India,¹⁸³ an extension of the original experimental license,¹⁸⁴ and various siting clearances for AV/BWA towers.¹⁸⁵ In this regard, the Claimants sustain that “no rational government would have lent its own time and resources to a trial program if (as it now claims) the system was never going to be and, indeed, could not be, approved.”¹⁸⁶

¹⁷⁸ Claimants' Reply on Quantum, footnote 17; Hearing Transcript, Day 1, pp. 68:15-70:9; Day 6, p. 1539:7-13; pp. 1702:23-1703:3.

¹⁷⁹ Claimants' Reply on Quantum ¶ 18(e); see also Ex **C-258**, *Devas Multimedia Private Limited v. Antrix Corporation Limited*, ICC Case No. 18051/CYK, Final Award, September 14, 2015 (hereinafter, “**ICC Award**”) ¶ 339(b).

¹⁸⁰ Claimants' Submission on Quantum ¶ 81; see also *Bazelon I* ¶ 114.

¹⁸¹ Claimants' Submission on Quantum ¶ 84.

¹⁸² Claimants' Submission on Quantum ¶ 85; see Ex. **C-65/JCB-104**, License to Establish, Work and Maintain an Experimental Wireless Telegraph Station in India (May 7, 2009).

¹⁸³ Claimants' Submission on Quantum ¶ 8; see Ex. **C-61/JCB-100**, License to Import Wireless Transmitting and/or Receiving Apparatus into India (March 26, 2009).

¹⁸⁴ Claimants' Submission on Quantum ¶ 85; see Ex. **C-69/JCB-110**, Letter from DOT (Paramanantham) to Devas (July 15, 2009; extending the validity of Devas's experimental license up to September 30, 2009).

¹⁸⁵ Claimants' Submission on Quantum ¶ 85. See also Ex. **C-62/JCB-101**, SACFA Siting Clearance (March 30, 2009); **JCB-107/C-66**, SACFA Siting Clearance (June 2, 2009); and Ex. **C-69/JCB-109**, SACFA Siting Clearance (July 13, 2009).

¹⁸⁶ Claimants' Reply on Quantum ¶ 104; *cf.* Respondent's Rejoinder on Quantum ¶ 54 and footnote 154; quoting **App. MR-1**, Letter from M. K. Rao, Deputy Wireless Advisor, WPC Wing, Department of Telecommunications, to M/s Devas Multimedia Pvt. Ltd., 13 January 2009; Supplemental Direct Testimony of Mr. Nitin Jain, dated 19 October 2017 (hereinafter, “**Jain II**”) ¶ 3; Supplemental Direct

268. Furthermore, they consider that with ISRO/Antrix's help, to which Devas was contractually entitled, "it was reasonable to believe that such authorization would be forthcoming."¹⁸⁷ They also point out that the Devas Agreement envisaged the establishment of a hybrid satellite-terrestrial communications system and, accordingly:

From the outset, DOS/ISRO, therefore, at all times knew that, at the appropriate time, they would be contractually obligated to support an application by Devas for frequency authorization to operate the terrestrial component (...) It further follows that DOS was not aware of any actual prohibition on the use of the terrestrial component of the system in S-band spectrum (...) (otherwise, DOS would have had no reason to embark on this venture in the first place).¹⁸⁸

269. The Claimants rely on several documents put forward by the Respondent to support their claim about the likelihood of terrestrial re-use authorization. Firstly, the Claimants argue that the letter from Dr. Radhakrishnan to the Law Ministry asking advice "on whether [the] ANTRIX-Devas contract need[s to] be annulled (...) to ensure a level playing field for the other service providers using terrestrial spectrum"¹⁸⁹ belies India's case that Devas could have never received a license for BWA services. There would have been no need to question whether the Devas Agreement needed to be annulled to preserve the level playing field in the area of BWA terrestrial services, if Devas could not be a player in that area in the first place.¹⁹⁰
270. Second, the Claimants also contend that the two letters from the Indian Department of Telecommunications ("DOT") to the Indian Department of Space ("DOS") of July 6, 2010 and of July 28, 2010,¹⁹¹ on which the Respondent places great reliance, "are not competent evidence" of how Indian regulators would have acted in a "but for" scenario, as they "were written in

Testimony of Smt. M. Revathi, dated October 19, 2017 (hereinafter, "**Revathi II**") ¶ 20. See also Hearing Transcript, Day 6, p. 1549:3-6.

¹⁸⁷ Claimants' Reply on Quantum ¶ 16.

¹⁸⁸ Claimants' Reply on Quantum ¶ 18.

¹⁸⁹ Claimants' Reply on Quantum ¶ 19, quoting Ex. **R-25/JCB-153**, Letter from DOC (Dr. Radhakrishnan) to DOT (Thomas) dated June 16, 2010.

¹⁹⁰ Claimants' Reply on Quantum ¶ 20.

¹⁹¹ Claimants' Reply on Quantum ¶ 21; see also Ex. **R-138**, Letter from DOT (Thomas) to DOS (Radhakrishnan) dated July 6, 2010 [Note of the Tribunal: the document bears the date "06.07.2007," which the Parties agree must be erroneous]; Ex. **R-139**, Letter from DOT (Chandra) to DOS (Radhakrishnan) dated July 28, 2010.

response to a June 16, 2010 letter from Dr. Radhakrishnan”¹⁹² in which he was “seeking advice concerning the annulment [of] the Devas Agreement.”¹⁹³ Accordingly, the Claimants argue that

given that the primary motivation of DOT appears to have been to aid Dr. Radhakrishnan in his effort to annul the Devas Agreement (a process that was deemed unlawful by this Tribunal), these letters should be excluded from any consideration of the value of the spectrum that was lost as a consequence.¹⁹⁴

271. The Respondent, on the other hand, argues that the Secretary of the DOT and the Wireless Advisor did not take any position on the question of the annulment of the Devas Agreement in their letters.¹⁹⁵ Rather, they only expressed their “firm views” that if the spectrum were to be used terrestrially for commercial services and such use were to be granted to Devas, “Devas would be required to pay a spectrum charge commensurate with the amounts paid in the 2010 auction of BWA spectrum.”¹⁹⁶ The Respondent criticizes as baseless the Claimants’ argument that these communications should be disregarded in a “but for” scenario¹⁹⁷ (see below, “India’s Level Playing Field Policy”).
272. In any event, the Claimants contend that the above-referenced letters actually undermine India’s position. In the Claimants’ view, “they do not reflect a genuine ‘level playing field’ analysis; they take no account of Devas’s incumbency, and they rely on a false ‘auction’ paradigm that could never have applied to the satellite spectrum already allocated to Devas.”¹⁹⁸ The Claimants’ position is that such letters overlook the “significant difference” between an authorization to re-use spectrum and the granting of spectrum, as noted by the Indian Supreme Court in *Centre for Public Interest Litigation v. Union of India et al.*¹⁹⁹ In particular, the Claimants argue that the July 28, 2010 letter actually undercuts the Respondent’s position because the letter “[b]y its own terms

¹⁹² Claimants’ Reply on Quantum ¶ 121.

¹⁹³ Claimants’ Reply on Quantum ¶ 120, quoting Ex. C-258, ICC Award ¶ 339 n. 383 (citations omitted). See also Hearing Transcript, Day 6, p. 1612:21-23.

¹⁹⁴ Claimants’ Reply on Quantum ¶ 123; referring to Ex. CL-27, *Occidental Petroleum Corp. v. Ecuador*, No. ARB/06/11, Award (ICSID 2012) ¶ 564; Ex. CL-127, *Amco Asia Corp. v. Indonesia* (Resubmitted Case), No. ARB/81/1, Award (ICSID 1990) ¶ 187.

¹⁹⁵ Respondent’s Rejoinder on Quantum ¶ 5.

¹⁹⁶ Respondent’s Rejoinder on Quantum ¶ 5; Hearing Transcript, Day 6, pp. 1621:7-1622:3.

¹⁹⁷ Respondent’s Rejoinder on Quantum ¶¶ 5-8; Hearing Transcript, Day 6, pp. 1620:18-1621:4.

¹⁹⁸ Claimants’ Reply on Quantum ¶ 124.

¹⁹⁹ Claimants’ Reply on Quantum ¶ 124; referring to Ex. CL-128, *Centre for Public Interest Litigation v. Union of India*, 6 SCC 408 (2016) ¶¶ 29-30.

(...) contemplates authorizing Devas's use of terrestrial components in the S-band for BWA services: the only issue the letter raises is price."²⁰⁰

273. The Claimants also rely on the 2005 TRAI Recommendations which, they consider, "explicitly encouraged such re-use [of the satellite spectrum terrestrially]."²⁰¹ The Claimants note that the TRAI recommended that

the licenses to be granted to potential satellite radio service providers should allow for the evolution of services from the initial simple, audio/data broadcasting to include video, internet applications and other advanced services. Such a licensing regime will encourage free growth of new applications and services which could be exploited due to the technological developments in the field of broadcasting and telecommunication. This licensing approach will also lead to flexible and efficient utilization of resources including scarce radio frequency spectrum.²⁰²

274. In the Claimants' view, to the extent that

the terrestrial component of the satellite AV services already had been considered and approved by TRAI as part of its regular process and recommendations, the WPC could not legitimately have declined an application by Devas to provide AV services using CGC, particularly since Devas was always willing to pay the fees set out in the 2005 TRAI Recommendations.²⁰³

275. According to the Claimants, "Indian telecom regulations are informed by international practices. TRAI looked to international practices in issuing 2005 TRAI recommendations."²⁰⁴ The Claimants also set forth the argument that Indian telecommunications policy requires that spectrum be put to its highest and best use and such policy has to adapt to keep pace with technological change.²⁰⁵ Therefore, "under its own constitution and statutes, India is not permitted to arbitrarily deny Devas an authorization to re-use its satellite spectrum terrestrially."²⁰⁶ [footnotes omitted]

276. The Claimants submit that the Respondent's "licencing arguments are clearly post hoc obstacles thrown up by India for purposes of supporting its litigation position in this case."²⁰⁷ In the

²⁰⁰ Claimants' Reply on Quantum ¶ 21; *c.f.* Respondent's Rejoinder on Quantum ¶¶ 14-18.

²⁰¹ Claimants' Reply on Quantum ¶ 82; Hearing Transcript, Day 6, pp. 1549:23-1550:2.

²⁰² Claimants' Submission on Quantum ¶ 35; quoting Ex. **C-198/JCB-39**, TRAI, Recommendations on Issues Relating to Satellite Radio Services ¶ 4.4.7 (June 27, 2005). See also Claimants' Reply on Quantum ¶ 84.

²⁰³ Claimants' Reply on Quantum ¶ 87.

²⁰⁴ Hearing Transcript, Day 6, p. 1561:11-14.

²⁰⁵ Claimants' Reply on Quantum ¶ 117; Hearing Transcript, Day 6, pp. 1550:13-19; pp. 1558:21-1559:8; pp. 1562:19-1563:13; *c.f.* Respondent's Rejoinder on Quantum, ¶¶ 34-36.

²⁰⁶ Claimants' Reply on Quantum ¶ 117.

²⁰⁷ Hearing Transcript, Day 1, p. 66:13-15; Day 6, pp. 1546:24-1547:3.

Claimants' view, the fact that the WPC did not give a negative answer to DT's approach for comfort, but "was noncommittal either way," evidences that the licensing hurdles put forward by the Respondent are a "litigation invention."²⁰⁸

b. Unlikelihood of Award of Terrestrial Re-use License

277. The Respondent underscores that for Devas to be able to provide its intended services, it would have required a license from the WPC for which it had not even applied and which the Government had no obligation to grant.²⁰⁹ In the Respondent's submission, "[t]here's no stabilisation clause or anything guaranteeing [Devas] that a certain policy has to be adopted or that spectrum charges should be to their liking."²¹⁰ Devas' investors were fully aware of the risk that such licenses might not be awarded.²¹¹ The Respondent points out:

DT (...) actually undertook due diligence with regard to the spectrum issues. DT invested in Devas knowing that there was uncertainty as to whether the required licenses to roll out the Devas services would be granted.²¹²

278. The Respondent further affirms that Mr. Larsen's Witness Statement does not reflect the substance of his testimony in the arbitration brought forth by DT. Mr. Larsen, whose testimony has been submitted by the Claimants, is Senior Vice President within the Group Technology Department of DT in Bonn ("**Mr. Larsen**"). According to the Respondent, *inter alia*, he does not inform the Tribunal that

DT approached WPC as part of its due diligence in order to get comfort on the licensing issue, and the WPC did not provide the desired comfort; and that DT then requested Devas to obtain comfort from the WPC in writing, but Devas never obtained that comfort and did not even want to approach the authorities at that stage.²¹³

279. Furthermore, the Respondent submits that Devas "flatly misrepresented the legal (...) position to DT during the negotiations, telling DT that it had (...) all the necessary approvals for the full suite of contemplated services."²¹⁴

²⁰⁸ Hearing Transcript, Day 6, pp. 1574:6-1575:7.

²⁰⁹ Hearing Transcript, Day 1, p. 98:6-9, 98:14-18; Day 6, p. 1622:9-17.

²¹⁰ Hearing Transcript, Day 6, p. 1717:10-13.

²¹¹ Respondent's Rejoinder on Quantum ¶ 12.

²¹² Respondent's Counter-Memorial on Quantum ¶ 24.

²¹³ Respondent's Counter-Memorial on Quantum ¶ 25; Hearing Transcript, Day 1, p. 99:15-25; *cf.* Hearing Transcript, Day 6, pp. 1574:6-1575:7.

²¹⁴ Hearing Transcript, Day 1, pp. 98:23-99:4; *cf.* Hearing Transcript, Day 6, pp. 1572:23-1573:8; pp. 1666:22-1667:9; p. 1701:7-25.

280. The Respondent also contests the Claimants' assertion that they could not apply for a license until a firm satellite launch date was obtained²¹⁵ and notes:

It was obviously the strategy of Devas and its shareholders to wait to make an application for an operating license for Devas' hybrid system until the satellite was launched (...) hoping that with the launch the Government would change its policy regarding the use to which the S-band spectrum could be put and ignore its level playing field policy.²¹⁶

281. In any event, Devas' license application would have had to be reviewed by the Apex Committee,²¹⁷ which, according to the Respondent, "would reject the application because the services Devas intended to offer were not covered by an extant licensing and spectrum regime."²¹⁸ The Respondent maintains that "the Government's contemporaneous view [was] that terrestrial transmissions were not permitted in the portions of S-band in which Devas hoped to operate a terrestrial business."²¹⁹

282. Accordingly, the Respondent argues that there was a substantial risk that the necessary licenses would not be granted and Devas' proposed services could never be provided, rendering the proposed business valueless.²²⁰ In the Respondent's view, the Claimants have not satisfied their burden of proving that the necessary licenses would have been granted,²²¹ and rely on the *Bear Creek* case to emphasize the importance of the burden of proof.²²² In any case,

the hybrid satellite/terrestrial multimedia services that Devas intended to provide would not have been permitted without review by the Apex Committee and, ultimately, a favourable recommendation by the TRAI, after its review in a transparent public process.²²³

283. Ms. Revathi, Senior Deputy Wireless Advisor in the Wireless Planning & Coordination Wing, whose testimony has been submitted by the Respondent ("**Ms. Revathi**"), states that the Committee would have rejected any application related to Devas' services, as those kind of

²¹⁵ See Respondent's Rejoinder on Quantum ¶ 54.

²¹⁶ Respondent's Rejoinder on Quantum ¶ 41.

²¹⁷ See Respondent's Counter-Memorial on Quantum ¶ 14: The Apex Committee is "the inter-ministerial committee charged with the review of license applications relating to interactive services that utilise space segment spectrum capacity."

²¹⁸ Respondent's Counter-Memorial on Quantum ¶ 14; see also Direct Testimony of Mr. Nitin Jain, dated May 15, 2017 (hereinafter, "**Jain I**") ¶ 8; Direct Testimony of Smt. M. Revathi, dated May 15, 2017 (hereinafter, "**Revathi I**") ¶ 11.

²¹⁹ Respondent's Counter-Memorial on Quantum ¶ 19. See also Jain I ¶ 9.

²²⁰ Respondent's Rejoinder on Quantum ¶ 12.

²²¹ Hearing Transcript, Day 6, p. 1674:2-5.

²²² Hearing Transcript, Day 1, p. 100:8-15; Day 6, pp. 1625:17-1626:11; p. 1627:9-24; *c.f.* Hearing Transcript, Day 6, p. 1599:2-25.

²²³ Respondent's Counter-Memorial on Quantum ¶ 20.

services had never been previously authorised: “the S-band spectrum at issue has never been designated for terrestrial use in India (...) its use terrestrially would not have been permitted in the absence of a change in policy.”²²⁴

284. Regarding the alleged “box-out” position held by Devas, the Respondent concedes that another operator could not use the same spectrum at the same time in the same location as Devas.²²⁵ However, the Respondent asserts that it was not excluded that spectrum in close proximity to the frequency range used by Devas could be used by a competitor as long as there was sufficient guard band.²²⁶ According to the Respondent, - the “so-called box-out theory (...) is bogus as a technical matter.”²²⁷ In any event, the Respondent argues that if there were anything behind such theory, as explained by Ms. Revathi, “the WPC would have regulated to address it (...) there was (...) no stabilisation clause (...) nothing that would immunize Devas from such legitimate governmental action.”²²⁸
285. The Respondent argues that the Claimants have no legitimate basis to rely on the 2005 TRAI Recommendations applicable to satellite radio in the changed technological and regulatory environment of 2010-2011.²²⁹ In support of this position the Respondent relies on Mr. M. Bhagirath’s testimony (Senior Deputy Wireless Advisor to the Government of India in the Wireless Planning & Coordination Wing, hereafter “**Mr. Bhagirath**”). Mr. Bhagirath considers that the 2005 TRAI Recommendations have no significance given that they

pre-dated its recommendations in 2007 and 2008 relating to auction (...) The 2005 recommendations, relating to a different service, were issued prior to the time that the value of spectrum was fully appreciated and would have had no effect on the amount that would have been imposed in 2011 for the use of the spectrum in S-band, which had not been designated for terrestrial use and which would have been subject to a separate TRAI

²²⁴ Respondent’s Counter-Memorial on Quantum, footnote 55 quoting Revathi I ¶ 13.

²²⁵ Respondent’s Rejoinder on Quantum ¶ 27.

²²⁶ Respondent’s Rejoinder on Quantum ¶ 27; Revathi II ¶ 6: “as long as there is sufficient guard band – so that the terrestrial transmissions do not interfere with the satellite transmissions – a competitor could operate in S-band spectrum being transmitted from the satellite in other regions.” See also Direct Testimony of Mr. K. Sethuraman, dated December 2, 2013 (hereinafter, “**Sethuraman I**”) ¶ 20, Supplemental Direct Testimony of Mr. K. Sethuraman, dated June 30, 2014 (hereinafter, “**Sethuraman II**”) ¶ 19; Sharony II ¶¶ 6, 19-29, 40-42.

²²⁷ Hearing Transcript, Day 1, p. 107:22-24.

²²⁸ Hearing Transcript, Day 1, p. 108:3-12.

²²⁹ Respondent’s Counter-Memorial on Quantum ¶ 22; referring to Direct Testimony of Mr. M. Bhagirath, dated May 15, 2017 (hereinafter, “**Bhagirath I**”) ¶¶ 10-11; Sethuraman II ¶¶ 13-15; Respondent’s Rejoinder on Quantum ¶ 26; referring to Supplemental Direct Testimony of Mr. M. Bhagirath, dated 19 October 2017 (hereinafter, “**Bhagirath II**”) ¶¶ 11-12; Jain II, n. 24.

consultative process.²³⁰

286. Furthermore, the Respondent also refers to a decision by the Supreme Court of India which found as follows;

[T]echnological developments in telecommunications are taking place at an abnormal pace. Various policy decisions taken at one point of time may, therefore, require a relook (...) circumstances may even mandate change of existing policy altogether.²³¹

287. The Respondent further notes that the Claimants themselves have relied on this same decision of the Supreme Court. However, the Respondent contests the Claimants' view that the decision of the Supreme Court would support their argument to the effect that, if a new complementary ground component ("CGC") is introduced by an incumbent operator due to technological evolution, the government must grant an authorization at a reasonable fee.²³² The Respondent argues that, under Indian law, the Government has

the exclusive privilege to establish, maintain and work the telegraphs (...) and has the right to grant licenses to others "on such conditions and in consideration of such payments as it thinks fit."²³³

288. The Claimants, on the other hand, criticize that Mr. Bagirath cites no support for his position that the 2005 TRAI Recommendations had been superseded or repealed.²³⁴ The Claimants affirm that he

does not identify with any specificity, which 2007 recommendations or 2008 recommendations somehow superseded the 2005 TRAI Recommendations (...) no "hypothetical buyer" would somehow intuit, as India suggests, that the 2005 TRAI Recommendations silently had been overridden.²³⁵

289. Likewise, the Claimants contend that Mr. Bhagirath "accepted in cross-examination that in 2009, [the 2005 Recommendations] were under consideration. So neither the TRAI nor did the

²³⁰ Bhagirath I ¶ 10.

²³¹ Respondent's Rejoinder on Quantum ¶ 49, quoting Ex. **CL-128**, *Centre for Public Interest Litigation v. Union of India*, Supreme Court of India, Judgment dated April 8, 2016, (2016) 6 SCC 408, ¶ 20.

²³² Respondent's Rejoinder on Quantum ¶ 50 referring to Claimants' Reply on Quantum ¶ 117.

²³³ Respondent's Rejoinder on Quantum ¶ 51. Respondent accepts that its discretion "is fettered by two constitutional limitations; firstly, that any decision of the State to grant access to natural resources, which belong to the people, must ensure that the people are adequately compensated, and secondly, the process by which such access is granted must be just, non-arbitrary and transparent, vis-à-vis private parties seeking such access" (Respondent's Rejoinder on Quantum ¶ 52, quoting Ex. **R-175**, *Bharti Airtel Ltd. and Others v. Union of India and Others*, Supreme Court of India, Judgment, dated May 14, 2015, (2015) 12 SCC 1 ¶ 44).

²³⁴ Claimants' Reply on Quantum ¶ 88.

²³⁵ Claimants' Reply on Quantum ¶ 88.

government think that they should be binned, because now we have the 2007 and 2008.”²³⁶ The Claimants also note that Mr. Bhagirath said in cross-examination that “he had not seen any document confirming that the 2005 recommendations had indeed not been accepted.”²³⁷

290. Furthermore, the Claimants note that the characterization of the 2008 TRAI Recommendations as a “value-destroying” event was rejected by the ICC Tribunal.²³⁸ The Claimants submit that the ICC Tribunal found that such Recommendations “only applied to the S-band allocated to DOT for terrestrial use. They did not apply to satellite spectrum allocated to the Department of Space for satellite use.”²³⁹

291. The Respondent contends that if the Government had authorised the terrestrial use of the spectrum, it would have regulated it in a manner consistent with its level playing field policy.²⁴⁰ It would thus have made sure that Devas could have used spectrum for transmitting satellite signals without interference, while allowing the same spectrum to be used terrestrially in other regions where Devas operated with different satellite spectrum.²⁴¹

4. Applicable License Fees

292. On the assumption that Devas would have to operate with a reduced spectrum, and on the further assumption that Devas would be granted by the relevant authorities the necessary licenses to provide all services that it intended to provide, the Parties disagree as to the amount of the fees that would have been levied.

a. Establishment of a “Reasonable” Fee

293. Concerning AV services, the Claimants affirm that the TRAI had already addressed in June 2005 the question of the issuance of a terrestrial repeater license and suggested that such license should be provided to satellite operators for a fee of 4% of gross revenue.²⁴² Therefore, the Claimants

²³⁶ Hearing Transcript, Day 6, p. 1557:18-21.

²³⁷ Hearing Transcript, Day 6, p. 1558:1-3.

²³⁸ Hearing Transcript, Day 1, p. 33:15-24.

²³⁹ Hearing Transcript, Day 1, p. 67:1-5.

²⁴⁰ Respondent’s Rejoinder on Quantum ¶ 29.

²⁴¹ Respondent’s Rejoinder on Quantum ¶ 29; see also Revathi II ¶ 15.

²⁴² Claimants’ Submission on Quantum ¶¶ 37, 87; see also Ex. C-198/JCB-39, TRAI, *Recommendations on Issues Relating to Satellite Radio Services* ¶ 3.4.7. (June 27, 2005); Claimants’ Reply on Quantum ¶ 85.

consider that the “WPC, acting fairly and rationally, as it must be assumed to act in a “but-for” world, would have permitted Devas to operate an AV satellite with repeaters business.”²⁴³

294. Concerning BWA services, the Claimants endorse Mr. Bazelon’s view that “Devas should have obtained a full re-use license enabling it to provide full BWA services at a reasonable fee, and certainly substantially less than fees paid at auction for unencumbered spectrum.”²⁴⁴ In support of their position, the Claimants rely on a recent judgment by the Supreme Court of India, in *Centre for Public Interest Litigation v. Union of India*,²⁴⁵ which provided:

[T]he issuance of licenses is different from the granting of spectrum, and that the (...) fee paid for Infotel for authorization to provide new services was not inadequate as Infotel had already been allocated spectrum and was not looking for more spectrum in order to provide these additional services.²⁴⁶

295. Similarly, according to the Claimants, Devas had already been allocated spectrum under the Devas Agreement and also had obtained an ISP license to provide certain services. Thus, the Claimants contend:

If anything, Devas (like Infotel) required an additional authorization from the WPC to re-use its allocated satellite spectrum terrestrially to provide additional services, in its case BWA services. Just as Infotel received permission to provide mobile voice telephony services by the payment of an incremental license fee, Devas equally should have received permission for terrestrial re-use to provide BWA services (...) To suggest that Devas would have been required to pay auction-level prices for this additional WPC authorization to use its already-allocated spectrum is unsupportable.²⁴⁷

296. According to the Claimants, in a “but for” world the letter by the Secretary of the DOT of July 6, 2010 and the letter by the Wireless Advisor to the Government of July 28, 2010 concerning the application of prices commensurate with auction rates should be disregarded because they were produced “in direct response to Dr. Radhakrishnan’s request for advice on the “annulment” of the Devas Agreement, and thus are not competent evidence of how a regulator, acting reasonably and fairly (and not animated by an annulment agenda) would have acted.”²⁴⁸ The Claimants endorse Mr. Bazelon’s position that “the rationalizations in those letters for charging “auction” rates do

²⁴³ Claimants’ Submission on Quantum ¶ 87; *cf.* Hearing Transcript, Day 1, p. 109:3-10.

²⁴⁴ Claimants’ Submission on Quantum ¶ 88; see Bazelon I ¶¶ 18, 119-125.

²⁴⁵ Claimants’ Reply on Quantum ¶ 115; referring to **CL-128**, *Centre for Public Interest Litigation v. Union of India*, 6 SCC 408 (2016).

²⁴⁶ Claimants’ Reply on Quantum ¶ 115.

²⁴⁷ Claimants’ Reply on Quantum ¶ 116.

²⁴⁸ Claimants’ Reply on Quantum ¶ 34; see also Bazelon II ¶ 24.

not, as an economic matter, make sense when applied to Devas, which already was the incumbent in that S-band spectrum.”²⁴⁹

297. Furthermore, the Claimants consider that the Respondent cannot construct its but-for scenario on the assumption that it would have committed additional Treaty violations,²⁵⁰ which is the case here, as the Respondent’s position to the effect that

the Indian government was at liberty (through the WPC) to levy a fee that effectively prohibited Devas from operating a business (...) surely would have given rise to further BIT violations, either on the basis that the purported “fee” amounted to a confiscatory measure in violation of Article 6, or that it constituted a breach of the FET or MFN provisions in Article 4.²⁵¹

298. The Claimants note that their experts have based their calculations of Devas’ fair market value on the assumption that Devas would have been charged an annual Terrestrial Re-Use Fee commensurate with the highest internationally reported terrestrial fee applied in the world in 2011 (which is the fee applied in Slovenia),²⁵² the application of which to the case would result in an annual fee of USD 361.7 million in the Reduced Spectrum Scenario.²⁵³
299. The Respondent’s expert, Mr. Flores, Managing Director of Econ One Research Inc. (“**Mr. Flores**”), disputes the selection of Slovenia’s fees as the highest internationally observable fee and proposes the fee of Italy as a benchmark.²⁵⁴ While such fee is still not indicative of what India would have charged (*see below*), Mr. Flores considers the selection of Slovenia’s fee incorrect and claims that Italy’s fee is more appropriate as it applies “[i]f CGCs constitute an independent terrestrial network,’ as in the case of Devas.”²⁵⁵ [footnotes omitted] The application of Italy’s fee to this case would result in a drop of Devas’ valuation from USD 1,495 million to USD 941 million, all else being equal.²⁵⁶
300. Nonetheless, the Claimants point out that Mr. Flores does not specify which fee was finally agreed with the Italian authorities and contend that “the limited publicly-available data” suggests that it

²⁴⁹ Claimants’ Reply on Quantum ¶ 34; see also Bazelon II ¶ 24; *c.f.* Respondent’s Rejoinder on Quantum ¶ 32.

²⁵⁰ Claimants’ Reply on Quantum ¶ 128

²⁵¹ Claimants’ Reply on Quantum ¶¶ 125-126.

²⁵² Claimants’ Submission on Quantum ¶ 89; see also Bazelon II ¶¶ 11, 127-128.

²⁵³ Claimants’ Submission on Quantum ¶ 89; see also Bazelon II ¶¶ 128-129; Hearing Transcript, Day 1, pp. 49:21-50:1.

²⁵⁴ Flores I ¶ 100.

²⁵⁵ Flores I ¶ 101.

²⁵⁶ Flores I ¶ 101.

differs from the “proposed” fee discussed above.²⁵⁷ Accordingly, they argue that Slovenia’s fee remains the “highest actualized and evidenced fee.”²⁵⁸

b. India’s Level Playing Field Policy

301. The Respondent contends that “even if Devas would have obtained the requisite licenses, which is highly unlikely on the record of this case, the spectrum charges it would have had to pay would have rendered the proposed Devas business economically non-viable.”²⁵⁹ According to the Respondent, the evidence demonstrates that India would have applied its level playing field policy, which would involve charging Devas a spectrum fee commensurate with auction prices.²⁶⁰
302. The Respondent points to the testimony of “senior Indian regulators” introduced by the Respondent,²⁶¹ whom the Respondent characterizes as “the senior government officials responsible for administering these regulations and implementing the policy on a daily basis.”²⁶²
303. Likewise, the Respondent relies on “contemporaneous documents,” in particular a letter from the Secretary of the DOT of July 6, 2010 and a letter from the Wireless Advisor to the Government of July 28, 2010, “which express the firm views that if the spectrum were to be used terrestrially for commercial services and use such were to be granted to Devas, Devas would be required to pay a spectrum charge commensurate with the amounts paid in the 2010 auction of BWA spectrum.”²⁶³

²⁵⁷ Claimants’ Reply on Quantum ¶ 155.

²⁵⁸ Claimants’ Reply on Quantum ¶ 156.

²⁵⁹ Respondent’s Rejoinder on Quantum ¶ 13. See also Hearing Transcript, Day 1, pp. 101:24-102:4, pp. 109:24-110:4.

²⁶⁰ Respondent’s Rejoinder on Quantum ¶ 13. See also Hearing Transcript, Day 1, pp. 101:10-14, p. 102:10-23.

²⁶¹ Hearing Transcript, Day 1, p. 102:10-23; Day 6, p. 1617:16-20.

²⁶² Hearing Transcript, Day 1, p. 103:22-25; *cf.* Hearing Transcript, Day 6, p. 1548:1-23 ([Mr. Salve] “(...) they are not key decision makers (...) Mr Jain headed the [Apex] committee, which was a low-level committee within the WPC Wing of the DOT. It was not a decision-making body, which he accepted. Ms Revathi joined this committee in 2015. She wasn’t there until 2015. And Mr Bhagirath has never been on this committee.”) See also Hearing Transcript, Day 6, pp. 1550:21-1551:6; pp. 1554:21-1555:3; p. 1556:7-11; pp.1556:21-1557:8; *cf.* Hearing Transcript, Day 6, pp. 1617:22-1618:1; p. 1678:4-10.

²⁶³ Respondent’s Rejoinder on Quantum ¶ 5; see also Ex. **R-138**, Letter from the Department of Telecommunications to the Department of Space (July 6, 2010) [Note of the Tribunal: the document bears the date “06.07.2007,” which the Parties agree must be erroneous], and Ex. **R-139**, Letter from the Department of Telecommunications to the Department of Space (July 28, 2010). See also Hearing Transcript, Day 1, pp. 104:13-106:4; Day 6, pp. 1621:7-1622:3.

304. According to the Respondent, “the level playing field policy was so essential to the regulatory structure that it would never be cast aside in the manner hypothesised by Claimants.”²⁶⁴
305. The Respondent refuses the Claimants’ assertion that the *Chorzów Factory* principle requires disregarding such letters in a “but-for” world. First, the Respondent considers that the principle is irrelevant to the case as the Tribunal determined in the Award on Jurisdiction and Merits that the Claimants are entitled to compensation under Article 6 of the Treaty, not on any other basis.²⁶⁵ In any event, even assuming its relevance, the Respondent claims that *Chorzów Factory* “does not dictate that the policies of India should be ignored.”²⁶⁶
306. The Respondent also addresses the Claimants’ contention that applying a level playing field policy would result in further Treaty violations by pointing out that “the precedents are unanimous that such policy decisions do not constitute treaty breaches (...) it is not the function of an arbitral tribunal to make policy for India.”²⁶⁷
307. The Respondent argues that the Claimants stretch *Chorzów Factory* beyond recognition because, if the fee on which they have based their calculations (the equivalent to the one used in Slovenia) were replaced by an amount equivalent to auction prices following India’s level playing field policy, the value of Devas’ business under their own modelling assumptions would be negative.²⁶⁸ The Respondent notes:
- The upfront spectrum charge for the use of 25.2 MHz of S-band spectrum based on the price obtained in the June 2010 auction of BWA spectrum in the 2300-2400 GHz band would be US\$ 3.428 billion.²⁶⁹
308. The Respondent contends that, “even at the ridiculously low 10.3% discount rate Claimants’ experts have used (...) the value that would result from that substitution would be negative US\$ 741 million, without making any other adjustments to Claimants’ cash flows.”²⁷⁰

²⁶⁴ Hearing Transcript, Day 1, p. 108:14-16.

²⁶⁵ Respondent’s Rejoinder on Quantum ¶ 6.

²⁶⁶ Respondent’s Rejoinder on Quantum ¶ 6.

²⁶⁷ Respondent’s Rejoinder on Quantum ¶ 55.

²⁶⁸ Respondent’s Rejoinder on Quantum ¶ 8.

²⁶⁹ Respondent’s Rejoinder on Quantum, footnote 22.

²⁷⁰ Respondent’s Rejoinder on Quantum ¶ 8; see also Flores II ¶15.

309. In the Respondent's view, the reason why the Claimants have assumed that this policy, which is at the heart of the Indian regulatory regime, would not be applicable to Devas in a "but-for" world, is that Devas could not compete on a level playing field.²⁷¹
310. In response to these views, the Claimants maintain that the Respondent's argument that Devas would never have received authorization for the terrestrial component of its system is invalid.²⁷² According to the Claimants, the Respondent "points only to a hodgepodge of things as 'evidence' of this policy,"²⁷³ and none of the documents relied on by the Respondent "actually addresses the position of a satellite operator seeking to re-use terrestrially satellite spectrum to which it already has access."²⁷⁴
311. In the Claimants' view, the "level playing field" theory has a "key flaw" in that "it falsely treats a satellite operator who already has spectrum rights as an entry-level BWA 'player' who has no rights at all unless it wins those rights at auction."²⁷⁵
312. Accordingly, they consider that the Respondent's argument that any spectrum fees would be commensurate to auction pricing

does not withstand objective scrutiny because it fails to take into account: (a) the significant policy differences between the re-use of satellite spectrum and the auctioning of terrestrial spectrum; (b) the fact that, far from being a new entrant, Devas was the S-band spectrum incumbent (...) by virtue of the "box-out" position held by Devas, there was no terrestrial competitor capable of bidding for spectrum (thus making the auction paradigm irrelevant).²⁷⁶

5. Viability of an "AV Services-Only Business" in the Reduced Spectrum Scenario

313. On the assumption that Devas would have to operate with a reduced spectrum, the Parties also address the possibility that Devas would only be able to provide AV services. As the following

²⁷¹ Respondent's Rejoinder on Quantum ¶ 8.

²⁷² Claimants' Reply on Quantum ¶ 22.

²⁷³ Claimants' Reply on Quantum ¶ 108: "(1) Mr. Bhagirath's account of how two state-owned companies, BSNL/MTNL, were each allocated 20 MHz of S-band spectrum prior to the 2010 auction and then agreed to match the winning auction price; (2) the 2015 "liberalization" policy that allows incumbent licensees to "migrate their operations to new technologies and services"; (3) Dr. Flores's subjective (and flawed) interpretation of India's 1999 and 2012 National Telecom Policies; and (4) two DOT letters of June 2010 and the other materials associated with Dr. Radhakrishnan's annulment campaign." [footnotes omitted]; *cf.* Hearing Transcript, Day 1, p. 106:5-18; Day 6, pp. 1676:15-1677:6.

²⁷⁴ Claimants' Reply on Quantum ¶ 109 ; *cf.* Respondent's Rejoinder on Quantum ¶¶ 41-46.

²⁷⁵ Claimants' Reply on Quantum ¶ 109. See also Hearing Transcript, Day 6, pp. 1566:1-9; pp. 1566 :15-1567:17.

²⁷⁶ Claimants' Reply on Quantum ¶ 23. See also Hearing Transcript, Day 1, pp. 71:23-72:5; *cf.* Hearing Transcript, Day 6, p. 1622:11-15.

paragraphs set out, the Parties disagree as to what would be the value of Devas in such circumstances.

314. The Claimants assert that even in default of obtainment of a WPC License for BWA services (*i.e.* if WPC refused to grant the license or put forward an unreasonable fee), Devas could still provide AV services, as they could be delivered directly from the satellite in areas with a clear line of sight and “through the use of a Complementary Ground Component (‘CGC’) in areas where a direct line of sight to the satellites was unavailable” (*i.e.* using terrestrial towers to repeat the signal on the ground).²⁷⁷

315. The Claimants contend that, given the specific provisions of the 2005 TRAI recommendations,

India’s claim that the WPC would have rejected an application by Devas to use CGC as part of its AV-only business is disingenuous – particularly given that its witnesses elsewhere acknowledge that TRAI’s pronouncements play a significant role in the telecommunications arena in India.²⁷⁸

316. In this scenario, Devas would have followed a different tower network configuration to optimize its AV services.²⁷⁹ Mr. Bazelon indicates that such network would be built more efficiently as Devas would use higher towers that would cover a wider area, thereby reducing the number of towers and associated costs, without creating any interferences with the BWA network.²⁸⁰

317. The Claimants affirm that the Respondent’s expert, Mr. Flores, “fails to supply any proper basis for disregarding Brattle’s independent valuation of an AV-only business as being worth USD 434 million.”²⁸¹

318. In contrast, the Respondent argues that “an AV-only business would require a separate licence from the Ministry of Information and Broadcasting”²⁸² and notes that “no such service has ever been licenced in India.”²⁸³

319. Mr. Flores suggests in his second expert report that there would be three possible regulatory scenarios in an AV-only business. Namely, (i) that Devas would be only permitted to transmit

²⁷⁷ Claimants’ Reply on Quantum, ¶ 82; Submission on Quantum ¶¶ 87, 104. See also Parsons IV ¶ 65.

²⁷⁸ Claimants’ Reply on Quantum ¶ 86; see also Jain I ¶ 3, Revathi I ¶ 11, and Bhagirath I ¶ 2. See also Hearing Transcript, Day 1, p. 64:18-23.

²⁷⁹ Claimants’ Submission on Quantum 105; Parsons III ¶ 41.

²⁸⁰ Claimants’ Submission on Quantum ¶ 106; see also Bazelon I, Appendix B ¶ 166; Parsons III ¶¶ 41-43.

²⁸¹ Claimants’ Reply on Quantum ¶ 31; see also Sacks II Table 3.

²⁸² Hearing Transcript, Day 1, p. 87:13-15.

²⁸³ Hearing Transcript, Day 1, p. 87:19-20.

over a satellite (“*satellite-only*” scenario); (ii) that Devas would be permitted to use a terrestrial network as a gap filler in areas with line-of-sight issues (*i.e.* urban areas) but only to broadcast the same content that was broadcast over the satellites (the “*gap-filler*” scenario); and (iii) that Devas could broadcast extra content over its terrestrial network (the “*extra-content*” scenario).²⁸⁴

320. Mr. Flores points out that the Claimants do not engage with scenarios (i) and (ii) supposedly because they would lead to a negative valuation, but rather only engage with the third possible regulatory scenario, although that scenario would be inconsistent with regulatory policy in India.²⁸⁵ In contrast, the Claimants argue that their account of the AV-only business “assumes that only content that was available on the satellite would be re-transmitted through its terrestrial repeaters; no ‘new’ (*i.e.* not carried on the satellite) content would have been transmitted through its repeaters.”²⁸⁶
321. In any event, Mr. Flores argues that, even assuming that terrestrial use of the spectrum were authorised, the 2005 TRAI recommendations only support, at most, the gap filler scenario.²⁸⁷ Mr. Flores refers to his First Report, where he showed that under a gap filler scenario which aligns with the 2005 TRAI recommendations “Brattle’s FMV of Devas’ AV-only business of US\$ 434.3 million would become negative, all else being equal.”²⁸⁸ [emphasis in original] The Respondent underscores that “[t]here is no commercial satellite to mobile AV business anywhere”²⁸⁹ in the world which has been successful and concludes that “there is no basis whatsoever for any compensation based on the purported AV-only business.”²⁹⁰

B. ORIGINAL SPECTRUM SCENARIO

322. On the assumption that Devas would have to operate with the same spectrum as originally envisaged in the Devas Agreement, the Parties likewise discuss (i) spectrum entitlement; (ii) business configuration, including technology arrangements and satellite launch dates; (iii) regulatory risks; and (iv) applicable license fees. The Parties also address the value of an AV Services-only business in the Original Spectrum Scenario.

²⁸⁴ Flores II ¶ 76.

²⁸⁵ Flores II ¶ 77.

²⁸⁶ Claimants’ Reply on Quantum ¶ 93.

²⁸⁷ Flores II ¶ 77.

²⁸⁸ Flores II ¶ 83, quoting Flores I ¶ 69.

²⁸⁹ Hearing Transcript, Day 6, p. 1692:17-18.

²⁹⁰ Hearing Transcript, Day 6, p. 1693:7-8.

1. Spectrum Entitlement and Division

323. The Parties address Devas' spectrum entitlement on the assumption that Devas would have to operate with the same spectrum as originally envisaged in the Devas Agreement.

324. The Claimants' expert, Mr. Bazelon, in his third expert report issued in response to the Tribunal's request to the Parties of November 13, 2017 to address an alternative valuation approach, addresses Devas' spectrum entitlement and its use in the Original Spectrum Scenario as follows:

With the full 70 MHz of spectrum available, Devas's planned AV services would be delivered nationally via satellite broadcast, and supported by a network of terrestrial towers in urban areas while Devas's planned BWA services would be offered in urban areas over a terrestrial BWA network using the same satellite spectrum that had been allocated to Devas under the Devas Agreement.²⁹¹

325. Mr. Bazelon incorporates by reference in his third report his analysis of the key market developments which purportedly made Devas' proposed BWA business "highly attractive"²⁹² in the Indian market as of the valuation date;

4G networks, like Devas's planned BWA network, are capable of providing high throughput and download speeds in ways 2G and 3G networks cannot, so this smartphone-related demand radically increased the demand for, and value of, 4G (*i.e.* BWA) spectrum (...) So as of at least early 2011 there was a strong expectation of high and growing demand for 4G services in the coming years with a single private nationwide competitor for Devas (...) By 2010 the view that, eventually, every cellphone user would have a smartphone and demand lots of bandwidth had moved from a potential future to reality (...) In India, the number of mobile subscribers grew from 99 million voice subscribers by year end 2007 to 584 million by year end 2010.²⁹³ [footnotes omitted]

326. Mr. Bazelon also regards as equally applicable to the Original Spectrum Scenario his analysis of the technological progress achieved by Devas, which by 2011 had achieved several important technological milestones.²⁹⁴

327. Mr. Bazelon claims that in addition to AV and BWA services, Devas also planned to provide additional societal services under the Original Spectrum Scenario including emergency communications, disaster warning, transportation and logistics services.²⁹⁵

²⁹¹ Third Expert Report of Dr. Coleman Bazelon dated November 29, 2017 (hereinafter, "**Bazelon III**") ¶ 11.

²⁹² Bazelon III ¶ 9.

²⁹³ Bazelon I ¶¶ 33-45, incorporated by reference in Bazelon III ¶ 9.

²⁹⁴ Bazelon I ¶¶ 47-50, incorporated by reference in Bazelon III ¶ 10.

²⁹⁵ Bazelon III ¶ 11.

328. The Respondent and its expert do not explicitly address this issue in their supplemental submissions or expert reports.

2. Technical Risks

329. On the assumption that Devas would have to operate with the same spectrum as originally envisaged in the Devas Agreement, the Parties discuss certain main features of Devas' business configuration, including the appropriate technology arrangements and satellite launch dates in these circumstances.

a. Technology in Devas' Business Plan

330. Mr. Bazelon notes in his third report that his overview of Devas' original business plan in his first report applies equally to the Original Spectrum Scenario.²⁹⁶ The main aspects of Devas' original business plan are the following:

Devas would broadcast the AV content using ten downlink transponders and five spot beams on two satellites in the downlink frequency bands, and have user communication to the satellites through the MSS spectrum (...) Devas's AV services would consist of basic (free-to-air) channels and premium packages as well as pay-per view services (...) Devas's original plan was to use 20 MHz of spectrum to offer the AV broadcast service and use an additional 10 MHz as a "guard band." This would allow it to utilize 20 MHz of the remaining BSS spectrum for its BWA service (with an additional 10 MHz available) (...) Devas planned to offer BWA services via a terrestrial network to fixed and mobile devices in cities with populations greater than 200,000 people. As of 2009, Devas planned to offer differentiated retail and enterprise plans (...) By at least 2010, Devas had determined it would roll out its network using LTE from the outset.²⁹⁷ [footnotes omitted]

331. Nonetheless, he points out that, while in the Reduced Spectrum Scenario "Devas would integrate its planned urban AV and BWA segments into a single LTE network"²⁹⁸ using eMBMS technology, in the Original Spectrum Scenario this was merely a possibility. While this option would allow a reduction in network costs, it would also involve a reduction in value due to the necessary delay in AV services deployment and the payment of an additional terrestrial re-use fee for 5 Mhz of spectrum. Accordingly, assuming that Devas would have been charged the highest terrestrial re-use fee seen internationally, "the eMBMS integration is not as attractive a

²⁹⁶ Bazelon III ¶ 8.

²⁹⁷ Bazelon I ¶¶ 26-30, incorporated by reference in Bazelon III ¶ 8.

²⁹⁸ Bazelon III ¶ 13.

proposition and my cash flow projections in the Original Spectrum Case assume that Devas would not have proceeded with it.”²⁹⁹

332. Similarly, Mr. Flores notes that, in contrast with the Reduced Spectrum Scenario in which the Claimants’ experts assume that Devas would have relied on eMBMS technology, in the Original Spectrum Scenario they assume that Devas would have delivered AV services over a separate terrestrial DVB-SH network, which would require the original equipment contemplated in the Darwin Model (increasing both OPEX and CAPEX in comparison with the Reduced Spectrum Scenario).³⁰⁰ The Darwin Model is a pre-dispute business plan made by Devas in the ordinary course of business in 2009, which is being used by the Claimants’ experts in the present arbitration as a basis for the development of their DCF valuation of Devas.³⁰¹
333. Mr. Bazelon also notes that without spectrum constraints Devas could offer the full set of initially envisaged AV services in rural areas too, such that it could have charged the originally planned prices in rural areas (*i.e.* without a 50% price reduction commensurate to the limited AV services available in those areas in the Reduced Spectrum Scenario).³⁰²

b. Satellite Launch Dates

334. Mr. Bazelon notes that the two satellites Devas would have used in the Original Spectrum Scenario were nearly completed by mid-2010 and that he is

instructed to assume that the first satellite would have been launched on July 1, 2010 and that the second satellite would have been launched six months later on January 2011. The lease term under the Devas Agreement would, accordingly, start on July 1, 2010. Roll-out of the AV terrestrial network would start in October 2010 in Devas Group 1 (Bangalore) (...) Devas would not have had to reconfigure the satellite to accommodate the reduced spectrum and therefore would not have delayed the launch date by one year, as assumed in the Reduced Spectrum Case.³⁰³ [footnotes omitted]

²⁹⁹ Bazelon III ¶ 14.

³⁰⁰ Supplemental Expert Report of Econ One Research, Inc. prepared by Dr. Daniel Flores on November 29, 2017 (hereinafter, “**Flores III**”) ¶ 11.

³⁰¹ For further description of the Darwin Model, see Claimants’ Submission on Quantum ¶¶ 68-72; and Witness Statement of Dr. Kim Kylesbech Larsen, dated January 13, 2017 (hereinafter, “**Larsen I**”) ¶¶ 18, 23, 26, 36-37. See also Hearing Transcript, Day 1, p. 40:18-41:9.

³⁰² Bazelon III ¶ 18.

³⁰³ Bazelon III ¶ 16.

335. Furthermore, the Claimants argue that in the Original Spectrum Scenario “a postponement of the launch date does not decrease value. In fact, it could add value.”³⁰⁴
336. Mr. Flores criticizes as illogical the Claimants’ experts’ assumption that in the Original Spectrum Scenario the satellites would have been launched in July 2010 (GSAT-6) and January 2011 (GSAT-6A), as opposed to the July 2011 launch date assumed in the Reduced Spectrum Scenario. He contends that no investor would have made such an assumption as of the valuation date. One cannot carry out an economic valuation as of February 2011 assuming the occurrence of events in 2010 which everyone knows did not occur.³⁰⁵ However, such assumption by the Claimants accelerates CAPEX, number of subscribers and roll-out of AV services, which the Claimants’ experts assume to be available in urban areas from October 2010 instead of January 2012 (as they assume in the Reduced Spectrum Scenario).³⁰⁶ On the other hand, he notes that the launch of two satellites instead of one results in higher satellite costs.³⁰⁷

3. Regulatory Risks

337. The Parties are in disagreement as to the likelihood that Devas would obtain from the relevant Indian authorities all the licenses required to provide the services envisaged by Devas, as already noted above in respect of the Reduced Spectrum Scenario.
338. Mr. Bazelon opines that being in a “box-out” position, Devas would have reasonably expected to receive authorization for terrestrial re-use of spectrum.³⁰⁸ He points out that he was instructed to calculate the terrestrial re-use fee on the basis of the highest internationally observable fee.³⁰⁹ In the Original Spectrum Scenario,

Devas would have had available 30 MHz for its BWA network. Under the high Terrestrial Re-Use Fee I was instructed to apply, I assume that Devas would use only 20 MHz of spectrum for BWA services and leave the additional 10 MHz available as an option for future capacity expansion. This is a conservative assumption because, as I noted, Devas and the WPC would be rationally expected to reach an agreement on a reasonable fee that would allow such spectrum to be put to its highest and best use.³¹⁰

³⁰⁴ Hearing Transcript, Day 1, p. 30:15-17; Day 6, p. 1612:3-5.

³⁰⁵ Flores III ¶ 31.

³⁰⁶ Flores III ¶¶ 14-15, 17.

³⁰⁷ Flores III ¶ 16.

³⁰⁸ Bazelon III ¶ 38.

³⁰⁹ Bazelon III ¶ 12. See also Hearing Transcript, Day 6, p. 1585:2-20.

³¹⁰ Bazelon III ¶ 12.

339. Mr. Flores notes that the Claimants' experts affirm that in the Original Spectrum Scenario Devas would pay a terrestrial spectrum re-use fee of USD 289.4 million (commensurate with the fee applied in Slovenia) for a 20 Mhz LTE channel, but Devas would not need an additional 5 Mhz LTE channel as would have been required in the Reduced Spectrum Scenario.³¹¹ This implies that the terrestrial spectrum fees would be lower in a scenario where Devas would have had 63 Mhz of spectrum available than in a scenario where Devas only had 25 Mhz of spectrum available.
340. Mr. Flores also notes that Devas' expert in the ICC Arbitration assumed payment of fees for the full 70 Mhz of spectrum and that, if this approach had been followed here and the spectrum fees be updated to account for 70 Mhz of available spectrum, the Claimants' experts' valuation of Devas would be negative USD 428.9 million, all else being equal.³¹²

4. Applicable License Fees

341. On the assumption that Devas would have to operate with the same spectrum as originally envisaged in the Devas Agreement, and on the further assumption that Devas would be granted by the relevant authorities the necessary licenses to provide the services which it intended to provide, the Parties are in disagreement as to the amount of the fees which would have been levied.
342. Mr. Bazelon calculates the applicable terrestrial re-use fee on 20 Mhz of spectrum on the basis of the highest internationally observable fee and obtains a fee amounting to USD 298.4 million per year.³¹³ He points out:

[S]ince in the Original Spectrum Case the terrestrial AV retransmissions do not use the BWA network, the fee applied to the BWA spectrum in the Reduced Spectrum Case would not be appropriate in the Original Spectrum Case. Instead, recognizing that the TRAI recommended a fee for AV repeaters of 4% of AGR and that I already model Devas paying 6% of AGR, I did not include any fee for the AV portion of the terrestrial network.³¹⁴

343. On the other hand, Mr. Flores claims that, if terrestrial spectrum re-use fees were calculated using an upfront fee commensurate with the 2010 BWA auction results, as according to Indian regulators would have been the case following Indian policy, whether for 20 or for 25 MHz, the

³¹¹ Flores III ¶ 12.

³¹² Flores III ¶ 13.

³¹³ Bazelon III ¶ 39.

³¹⁴ Bazelon III ¶ 39.

Claimants' experts' DCF valuation of Devas would turn negative, even maintaining all other assumptions.³¹⁵

5. Viability of an "AV Services-Only Business" in the Original Spectrum Scenario

344. On the assumption that Devas would have to operate with the same spectrum as originally envisaged in the Devas Agreement, the Parties also engage with the possibility that Devas would only be able to provide AV services. The Parties are in disagreement as to the value of Devas in such circumstances.
345. The Claimants contend that, given that the 2005 TRAI Recommendations specifically contemplated such business and encouraged it, no licensing problem would arise.³¹⁶ Mr. Bazelon calculates the value of an AV-only business under the Original Spectrum Scenario assuming that "Devas would have been allowed to re-use the satellite spectrum terrestrially to offer audio and video services but not to offer BWA services."³¹⁷ In this case, Devas would have built the same network of terrestrial towers as he described for an AV-only business under the Reduced Spectrum Scenario.³¹⁸ However, Devas would have used two satellites, so his calculation includes upfront capacity reservation fees and lease fees for both satellites.³¹⁹
346. Mr. Bazelon underscores that in the Original Spectrum Scenario Devas would have been able to deliver its AV services as originally planned, so he does not assume a 50% reduction in revenues from rural areas.³²⁰ Moreover, he also assumes that AV services would have been rolled out earlier in this scenario.³²¹
347. On the other hand, as pointed out above in the discussion of the Reduced Spectrum Scenario, the Respondent argues that "an AV-only business would require a separate licence from the Ministry of Information and Broadcasting"³²² and notes that "no such service has ever been licenced in India."³²³

³¹⁵ Flores III ¶ 20.

³¹⁶ Hearing Transcript, Day 1, p. 64:18-23.

³¹⁷ Bazelon III ¶ 45 (Appendix A).

³¹⁸ Bazelon III ¶ 45 (Appendix A).

³¹⁹ Bazelon III ¶ 46 (Appendix A).

³²⁰ Bazelon III ¶ 47 (Appendix A).

³²¹ Bazelon III ¶ 458 (Appendix A).

³²² Hearing Transcript, Day 1, p. 87:13-15.

³²³ Hearing Transcript, Day 1, p. 87:19-20.

348. Mr. Flores notes that the AV-only business would consist of AV services delivered directly from the satellite and, if terrestrial repeating were authorized, a terrestrial DVB-SH network.³²⁴ In the Original Spectrum Scenario Devas would not have faced a 50% reduction in the number of channels available in rural areas and the corresponding decrease in price. Accordingly, the pricing for the AV plans put forward by the Claimants' experts' model matches the Darwin Model.³²⁵
349. Mr. Flores identifies "a number of flaws"³²⁶ in the Claimants' DCF projections of Devas' AV-only business in this scenario, including:

an inappropriate terrestrial spectrum fee, roof rental costs, tower height, and the premature rollout of AV services. In addition, Devas' AV-only business would still face a number of issues, including uncertainty over obtaining authorization for a terrestrial repeater network, competition from other TV providers, and a lack of marketability.³²⁷

350. Mr. Flores recalls his previous reports to the effect that, should Devas not obtain an authorization of terrestrial use of spectrum ("*satellite-only scenario*"), only customers with a direct line-of-sight to the satellite (*i.e.* in rural areas) would have been able to access its services. In his assessment, a satellite-only business is valueless. Even if Devas were given authorization for terrestrial re-use of spectrum, it would still have to face competition from both DTH and mobile TV operators providing services over BWA networks, and the use of a commercially unproven and unsuccessful technology, namely DVB-SH (...) Devas would also have been at a severe competitive disadvantage due to the lack of playback and on-demand services.³²⁸
351. Mr. Flores claims that addressing such challenges would be particularly difficult for Devas because (i) the quality of the broadcast from the satellites would remain static for the 12-year lives of the satellites, and (ii) as LTE networks are more widely used than DVB-SH networks, one would expect the latter to evolve more slowly.³²⁹ He points out that no company in the world had successfully commercialized a DVB-SH-based mobile TV service and contends that Devas' AV-only business lacks viability.³³⁰ As noted above, the Respondent relies on the inexistence of any successful "commercial satellite to mobile AV business anywhere"³³¹ in the world to conclude

³²⁴ Flores III ¶ 24.

³²⁵ Flores III ¶ 24.

³²⁶ Flores III ¶ 25.

³²⁷ Flores III ¶ 25.

³²⁸ Flores III ¶ 27.

³²⁹ Flores III ¶ 27.

³³⁰ Flores III ¶ 27.

³³¹ Hearing Transcript, Day 6, p. 1692:17-18.

that “there is no basis whatsoever for any compensation based on the purported AV-only business.”³³²

C. THE TRIBUNAL’S ANALYSIS

352. The Tribunal is not retaining the Reduced Spectrum Scenario for the purpose of valuation of damages in this case. The Respondent, in February 2011, did take over 100% of Devas and, in its Award on Jurisdiction and Merits, the Tribunal by majority concluded that only 40% of the value of Devas was subject to compensation. A willing buyer,³³³ just before the Respondent’s decision to takeover Devas, would have first determined the value of 100% of Devas as a whole and then decided how much it was ready to pay for the shares held by the Claimants, which were their only investment.

353. The Tribunal’s task therefore is to determine the value that a willing buyer would have been ready to pay, just before the CCS decision of February 17, 2011, for the shares in Devas held by the Claimants who, together holding 37.6% of Devas’ shares, had effective control of that company and then to retain 40% of that value as subject to compensation in proportion to the Claimants’ shareholding in Devas. The Tribunal sees no reason why such a buyer at that time would have limited himself to bidding for only 40% of the Claimants’ shares in Devas.

354. The Tribunal will now proceed to its analysis of the various issues raised by the Parties under the Original Spectrum Scenario.

1. Spectrum Entitlement and Division

355. The Tribunal is satisfied that, subject to the issuance of the necessary licenses and but for the February 17, 2011 CCS decision, Devas would have operated with the same spectrum as originally envisaged in the Devas Agreement. The Tribunal is also satisfied that, subject to the same conditions, Devas would have proceeded with both planned AV and BWA services as described by Mr. Bazelon in his third report and summarized in paragraphs 325-327 above.

2. Technical Risks

356. The Tribunal notes that the Parties are in disagreement as to whether terrestrial re-use of the spectrum would have been permitted by the Indian authorities (for further discussion on this issue,

³³² Hearing Transcript, Day 6, p. 1693:7-8.

³³³ When using this expression in this Award, the Tribunal includes the conditions described in the *CMS v. Argentina* case, quoted above at ¶ 181.

see section on Regulatory Risks below). Nevertheless, the Tribunal also notes that the Parties' respective experts agree that, in the Original Spectrum Scenario (and assuming that terrestrial re-use of spectrum were permitted), Devas would have delivered AV services over a separate terrestrial DVB-SH network and that this would require equipment contemplated in the Darwin Model.³³⁴

357. The Tribunal also agrees with Mr. Bazelon that, in a context without spectrum constraints, Devas would have been in a position to offer the full set of initially planned services and prices in rural areas.³³⁵

a. Evolution of the Business Environment Between 2009 and 2011

358. The Tribunal notes that Mr. Bazelon did a series of updates to the Darwin Model to reflect relevant technological developments and market changes.³³⁶ These updates notably relate to:

- (a) Devas' subscriber base projection, which was updated to reflect India's population growth projections on the basis of a 2011 census;
- (b) Devas' decision to roll out its network using LTE instead of WiMax by at least mid-2010;
- (c) higher cell capacity and reduced network costs as a result of the implementation of a cell site configuration made possible by the use of LTE technology;
- (d) lower costs of LTE radio equipment than assumed in the Darwin Model;
- (e) doubling the speed initially available under the retail BWA plans that Devas expected to offer to customers (while maintaining the price), given the speed of BWA services offered by competitors as of 2011;
- (f) higher costs for Devas of acquiring content for AV services.³³⁷

³³⁴ See Bazelon I ¶¶ 26-30, incorporated by reference in Bazelon III ¶ 8. See also, Bazelon III ¶ 13; Flores III ¶ 11.

³³⁵ See Bazelon III ¶ 18.

³³⁶ Mr. Bazelon also sought to account for hypothetical technological changes in the event of a Reduced Spectrum allocation. However, these changes are not relevant for the Tribunal's decision, which is based on the Original Spectrum scenario. See Expert Report of Mr. Benjamin Sacks, dated January 16, 2017 (hereinafter, "**Sacks I**") ¶ 30 and ¶ 131; for further detail, see Claimants' Submission on Quantum ¶¶ 73-81; and Bazelon I, Section III.

³³⁷ Claimants' Submission on Quantum ¶ 74; Bazelon I ¶ 16.

359. In the Tribunal's view, however, a more comprehensive analysis is called for. In conducting a valuation of the Claimants' investment, the relevant perspective is that of a hypothetical knowledgeable, willing, and unpressured buyer in February 2011, when that investment was lost. The Tribunal has no doubt that such a buyer would have accorded considerable weight to the analysis contained in the Darwin Model; it might well have prepared a modified DCF analysis of its own based on that model. In addition, however, a knowledgeable, willing, and unpressured buyer in February 2011 would have formed its own, independent view of the business outlooks for Devas, and it would not have relied in that regard on Devas' or DTs projections made back in 2008 and 2009.

i. Positive Market Development after 2008/2009

360. A hypothetical knowledgeable, willing, and unpressured buyer in February 2011 would have noted a number of positive developments since 2009.
361. The most noteworthy of these factors is that DT was still a committed partner of Devas. It followed through on its promise to contribute valuable expertise, manpower, contacts, and goodwill. While the prospect of DT's immaterial contributions would have been "priced in" when Deutsche Telekom Asia ("**DT Asia**") contributed capital in 2008 and 2009, it clearly would have been reassuring for a buyer in 2011 to see that Devas could continue to count on DT's support.
362. DT's continued support would also seem to increase, in the eyes of a willing buyer in February 2011, the chances of Devas' succeeding in adapting to new market needs or challenges, should it turn out (as will be addressed in the following sub-section) that aspects of the original business plan were unlikely to be adequate.
363. A willing buyer would also have noticed that Devas was able to meet certain important milestones between 2009 and February 2011. For instance, in 2009, Devas obtained all necessary licenses from the Indian authorities to develop its experimental trials so as to conduct a full AV/BWA business with terrestrial re-use. In addition to the experimental license,³³⁸ this included a license to import wireless transmitting and receiving technology into India,³³⁹ an extension of the original

³³⁸ Claimants' Submission on Quantum ¶ 85; see Ex. **C-65/JCB-104**, License to Establish, Work and Maintain an Experimental Wireless Telegraph Station in India (May 7, 2009).

³³⁹ Claimants' Submission on Quantum ¶ 8; see Ex. **C-61/JCB-100**, License to Import Wireless Transmitting and/or Receiving Apparatus into India (March 26, 2009).

experimental license,³⁴⁰ and various siting clearances for AV/BWA towers.³⁴¹ While the Tribunal concurs with the Respondent that the grant of the *trial* license to Devas as such did not, under Indian law, affect the need to obtain regulatory approvals for the future, *definitive* terrestrial re-use of spectrum,³⁴² the Tribunal has no hesitation to find that a willing buyer would have seen the trial license as a value-enhancing factor: it would have confirmed to it, first, that Devas was actively and successfully developing applications for its technology and, second, that Devas was capable of navigating the regulatory environment and build confidence with the Indian regulators.

364. Finally, a willing buyer in February 2011 would have felt encouraged by the enormous success of smartphones and tablets, which by then had become apparent to industry professionals and professional investors. Neither technology was in existence in 2005, when Devas tried to convince venture capital firms of its business plan.³⁴³ In 2008 and 2009, when the Darwin Model was completed and DT Asia made its capital contributions, those technologies were in their early infancy. As the Claimants' expert points out:

Starting in mid-2008 the iPhone, and similar easy-to-use flat-screen mobile devices, known as smartphones, rapidly and substantially increased the demand for high download speeds and high throughput capacity on wireless networks. For example, in 2009, AT&T's U.S. network (then the exclusive network for iPhones in the United States) experienced severe service problems due to a "tsunami" of demand for bandwidth that "no one was prepared for"³⁴⁴ due to the iPhone. 4G networks, like Devas's planned BWA network, are capable of providing high throughput and download speeds in ways 2G and 3G networks cannot, so this smartphone-related demand radically increased the demand for, and value of, 4G (i.e., BWA) spectrum.³⁴⁵

365. While in 2011 smartphones may not have been as widely available in India as in the United States,³⁴⁶ the Tribunal has no hesitation to conclude that the general environment for a technology company in the communications sector, which had secured substantial satellite bandwidth for the transmission of data for mobile BWA and AV services, was promising.

³⁴⁰ Claimants' Submission on Quantum ¶ 85; see Ex. **C-69/JCB-110**, Letter from DOT (Paramanantham) to Devas (July 15, 2009; extending the validity of Devas's experimental license up to September 30, 2009).

³⁴¹ Claimants' Submission on Quantum ¶ 85. See also Ex. **C-62/JCB-101**, SACFA Siting Clearance (March 30, 2009); **JCB-107/C-66**, SACFA Siting Clearance (June 2, 2009); and Ex. **C-69/JCB-109**, SACFA Siting Clearance (July 13, 2009).

³⁴² Respondent's Counter-Memorial on Quantum ¶ 63.

³⁴³ Presentation by Devas to Columbia Capital & Telcom Ventures, December 9, 2005 (Ex. **C-20/JCB-45**).

³⁴⁴ Ex. **BR-65**: Paul Taylor, "Data overload threatens mobile networks," Financial Times, available at <https://www.ft.com/content/caeb0766-9635-11e1-a6a0-00144feab49a> (last accessed January 4, 2017), dated May 9, 2012.

³⁴⁵ Bazelon I ¶ 33.

³⁴⁶ Bazelon I ¶ 34.

ii. Corresponding New Challenges to Devas' Technology Model

366. At the same time, the Tribunal acknowledges that a willing buyer analysing Devas' prospects in February 2011 would also have been conscious of technological developments in the area of mobile technology that call Devas' specific business model into question.
367. The Tribunal recalls that, in the Original Spectrum Scenario, Devas originally intended to rely on a combination of DVB-SH technology and WiMAX technology, with the latter being eventually replaced with the more advanced LTE standard;³⁴⁷ and it later envisaged a combination of DVB-SH technology and LTE technology.³⁴⁸ Yet, that technology model presented certain limitations.
368. As regards AV services, Devas' reliance on DVB-SH technology would not have looked particularly attractive to a willing buyer in 2011, as such technology was in fact not used in the majority of smartphones.³⁴⁹ As a result, most smartphones would not have the capability of capturing Devas' AV signal directly. Rather, a separate receiver would be required to use Devas' services. While these external receivers, to which the mobile telephone must be connected by cable, also called "access ports,"³⁵⁰ were relatively handy, the need for an external access port would put Devas at a real disadvantage to competitor services offered by mobile telephone companies that could be captured directly by a smartphone. The Tribunal considers that a willing buyer in the telecommunications sector, in 2011, would have hesitated to invest in technology using an external antenna for connectivity.³⁵¹
369. As regards BWA services, a willing buyer would have been conscious of the considerable uncertainty in early-2011 surrounding the LTE technology that would be required to use Devas' services. Mobile telephones featuring such technology were only beginning to be commercialized, and that in markets other than India.³⁵² In fact, the cost of rolling out such technology was regarded as so high that the cost of LTE devices in India was a limiting factor.³⁵³

³⁴⁷ Respondent's Counter-Memorial on Quantum ¶ 63; see also Ex. **BR-03**, Devas - Model Assumptions: Darwin Model, p. 52.

³⁴⁸ Claimants' Submission on Quantum, para. 74 referring to Larsen I, ¶¶ 21, 67-68 and Parsons III, ¶¶ 23-24.

³⁴⁹ Flores I ¶ 75.

³⁵⁰ Hearing Transcript, Day 2, pp. 402:13-406:14 (discussion of the functioning of access ports and their characteristics); Hearing Transcript, Day 2, p. 414:4-24 (Claimants' counsel showing the access port to Tribunal); Hearing Transcript, Day 2, p. 520:24-522:8 (discussion of mobile, portable, and fixed receivers); Fourth Witness Statement of Mr. Parsons, paras 44-45 (including an image of the access port).

³⁵¹ Flores II, ¶ 88 and 349.

³⁵² Flores I ¶¶ 306-313.

³⁵³ Flores I ¶ 56 and ¶ 310; referring to **EO-105**, Basharat Ashai, "India 4G And Cellular Market Analysis And Forecasts, 2011-2016 - 5th Edition," Maravedis Wireless Market Research & Analysis, May 2011, p. 7.

There was no certainty in early-2011 that, or when, LTE technology would be widely used in India.

370. Perhaps more fundamentally, the Tribunal must be cognizant of the fact that Devas' customers would not have been able to use their Devas devices for placing and receiving regular telephone calls. That is so because Devas had no license for mobile telephony.³⁵⁴ Accordingly, Devas' customers would not be assigned a telephone number in the Indian telephone network and would be unable to place and receive calls within that network. While the Claimants' expert notes that Devas' customers could still have used voice-over-IP services,³⁵⁵ it is evident to the Tribunal that such voice-over-IP services are no equivalent substitute for the attribution of a regular telephone number, enabling the user to place and receive calls within the national telephone network. As a result, the Tribunal finds the conclusion of the Respondent's expert³⁵⁶ that Devas' customers would in practice have had to carry two mobile devices – a mobile telephone from another operator and a Devas BWA device – to be convincing. There is indeed a real question whether customers in India would not have preferred to subscribe to both telephony services and data services from the same provider, using one and the same smartphone. Devas was thus at a disadvantage compared to competitors with a telephony license, and a willing buyer in 2011 familiar with the telecommunications market would have been acutely aware of that aspect.

iii. Conclusion

371. The Tribunal thus concludes that a 2009 outlook on the business environment in 2011, as it underlies valuations based on the Darwin Model, both understates the market potential and overstates Devas' likely success in that market. It understates the market potential because a buyer in early-2011 would have found an investment in the Indian broadband wireless mobile telephone sector even more attractive than in 2009. It overstates Devas' likely success because a buyer in 2011 would have had doubts as to whether Devas' technology model, developed in the years before the smartphone revolution, was an adequate fit for that burgeoning market.
372. In the Tribunal's view, it is not clear that a knowledgeable, willing, and unpressured buyer in February 2011 would have committed substantial capital to develop a mobile multi-media service that could not be accessed from a regular smartphone. At the same time, the Tribunal is not prepared to adopt a static view of Devas' likely market behaviour, as appears to underlie the

³⁵⁴ Bazelon II ¶ 166; Flores I ¶ 312.

³⁵⁵ Bazelon II ¶ 166.

³⁵⁶ Flores I ¶ 343.

Respondent's approach. It would be implausible to assume that Devas would have taken no measures to adapt to the new smartphone world.

373. While there is no specific evidence on the record that Devas was already working toward a different technology model, with the help of DT, in particular, Devas would have had the capacity to adapt its technology model over time, including potentially by obtaining a telephony license. Devas' position in February 2011 remained a privileged one because the company had exclusive use of satellite spectrum.

b. Satellite Launch Dates

374. The Tribunal agrees with the Respondent that one could not assume that a willing buyer in February 2011 would have based his purchase price on a satellite launch date in July 2010 which did not occur. However, the Tribunal notes the earlier assurance given to Devas to the effect that work on GSAT-6 was almost completed. The Tribunal refers in particular to the minutes of a meeting, on April 15, 2009 of the Geosat Programme Management Office, ISRO Satellite Centre, Bangalore, at which the Managing Director of Antrix "stressed that the satellite has to be launched in early 2010 for which efforts should be increased and concentrated to ready the satellite by year end."³⁵⁷ At another joint status review meeting of 11 and 12 November 2009, between Devas and ISRO/Antrix, an overview of the project was presented by Mr. V.R. Pratap, Project Director, GSAT-6 (Devas), ISRO Satellite Centre, Bangalore. That 34-page document demonstrated the very advanced readiness of the Satellite Realization Schedule, including a planned launch on June 19, 2010 for GSAT-6 and on March 25, 2011 for GSAT-6A.³⁵⁸ Even Dr. Radhakrishnan, who was by then improperly manoeuvring to annul the Devas Agreement, stated in early February 2010 that a new deadline for the launching of the satellite would be on September 1, 2010.³⁵⁹
375. The Tribunal is of the view that a launch date of June 2011 for GSAT-6 and June 2012 for GSAT-6A would have been a reasonable assumption to adopt by such a willing buyer in early 2011.

3. Regulatory Risks

376. In its Award on Jurisdiction and Merits,³⁶⁰ the Tribunal reached the following conclusion: "[o]n the basis of the evidence received by the Tribunal, it is satisfied that, even without a WPC license,

³⁵⁷ Ex. C-64, Compilation of Presentations by ISRO to Devas (April 11, 2009 onwards).

³⁵⁸ Ex. C-85, Presentation by ISRO (Pratap) to Devas (November 12, 2009).

³⁵⁹ Witness Statement of Mr. Ramachandran Viswanathan, dated 29 June 2013 ("Viswanathan I") ¶ 161.

³⁶⁰ Award on Jurisdiction and Merits ¶ 209.

Devas could have rolled-out satellite-only services. The Tribunal also notes that it has been satisfactorily established that, because of problems of interference, it would not have been possible for competing services to operate in the spectrum.” This is what has been described as the “box-out” position of Devas. The key issue concerning regulatory risks is whether Devas would have obtained a WPC License and, if so, at what price.

377. As to the possible issuance of a WPC License, the Tribunal recognizes that the Devas Agreement does not make it a formal obligation for the WPC to issue such a license but it cannot ignore the fact that the Devas Agreement describes Antrix as “a marketing arm of Department of Space and is the entity through which ISRO engages in commercial activities”³⁶¹ and that as part of that Agreement, Article 1.0 of Exhibit D states that “ANTRIX shall provide appropriate Technical assistance to DEVAS for obtaining operating license and approvals from various ministries so as to deliver DEVAS services and use ground/Terrestrial Equipments required to offer the Service.”³⁶² Moreover, it is worth reminding that, from October 2009 through July 2011, Dr. K. Radhakrishnan, the key actor in this dispute, was at the same time (a) Chairman of the Space Commission, (b) Chairman of ISRO (c) Secretary of DOS and (d) Chairman of Antrix. The Chairman of Antrix was therefore in an excellent position to assure approval by the other agencies in which he occupied a very senior position. It is also worth noting that the Prime Minister was the minister responsible for DOS.
378. The Tribunal also refers to following statement as reported in the Minutes of the Status Review of GSAT 6 with M/s Devas Multimedia Pvt., Ltd., on 11 April 2009 at the ISRO Satellite Centre:

Shri. KR Sridharamurthi, Managing Director, Antrix highlighted that GSAT 6 satellite scores over other satellites in many ways like adaptation of I2K bus, providing satellite terrestrial hybrid system for multimedia services with payload configuration being very unique making GSAT 6 a significant project adding a feather in the cap of ISRO. He stressed that the satellite has to be launched in early 2010 for which efforts should be increased and concentrated to ready the satellite by year end. He also remarked that the S-Band frequency spectrum was very important and there was a time limit to the allotted spectrum and hence, all efforts are to be put to retain our right over this important asset by launching the satellite in time. He also mentioned that a lot of recognition awaits this satellite.³⁶³

³⁶¹ Ex. C-16, Agreement for the Lease of Space Segment Capacity on ISRO/ANTRIX S-Band Spacecraft between Antrix Corp. Ltd. and Devas Multimedia Private Ltd. (Agreement No. ANT/203/DEVAS/2005), (January 28, 2005), p.1

³⁶² *Id.* Exhibit D, p. D2.

³⁶³ Ex. C-64, Compilation of Presentations by ISRO to Devas (April 11, 2009 onwards), p. 1

379. In addition, as late as 8 February 2011, Dr. Kasturirangan, a senior member of Antrix, had this to say at a press conference in presence of Dr. Radhakrishnan (Chairman of the Space Commission, Chairman of ISRO, Secretary of DOS and, Chairman of Antrix):

I think that Devas technology is the outcome of a consortium of top designers of communications systems across the world. Don't think that this is done in the Indian laboratory. It is a very unique technology which has been contributed by some of the best peers in the field.³⁶⁴

380. The Tribunal is left with little doubt that, in such a context, and had Dr. Radhakrishnan acted in accordance with the text of Article 1.0 of the Devas Agreement, a WPC License would have been issued in favor of Devas for the provision of BWA and AV services. In this regard, the Tribunal recalls that the Parties are in agreement that a WPC License would have been required in order for Devas to be able to terrestrially re-use the spectrum allocated to it for the provision of its envisaged BWA and AV services³⁶⁵ (the Tribunal has already found in its Award on Jurisdiction and Merits that a WPC License would not have been required for satellite-only services³⁶⁶).

4. Applicable License Fees

381. There remains the question of the fees that WPC would have required Devas to pay.
382. The Respondent argues that, under the level playing field policy in operation in India, Devas would have had to pay an amount equivalent to the amount charged to other applicants for a WPC License in 2011. It points out in particular to an auction of BWA spectrum in 2010 at which Infotel paid Rs 12,847.77 crore (USD 2.74 billion) for a 20 MHz national portfolio. On that basis, its expert argues that, even using Devas' proposed discount rate in the ICC Arbitration, an auction in the present case would have resulted in a substantial negative net present value for Devas.³⁶⁷
383. The Tribunal does not question the general level playing field policy adopted by the Respondent in connection with BWA spectrum allocation; it considers however that the Respondent's argument does not take into consideration the particular situation of Devas.

³⁶⁴ Ex. C-125/JCB-206, Transcript, ISRO Press conference ISRO press conference, CNN-IBN special telecast (excerpts highlighted) (February 8, 2011), p. 15.

³⁶⁵ See Claimants' Submission on Quantum ¶¶ 37, 87-88; Claimants' Reply on Quantum, ¶¶ 16, 85-87; Respondent's Rejoinder on Quantum ¶ 12.

³⁶⁶ Award on Jurisdiction and Merits ¶ 209.

³⁶⁷ See Flores I ¶ 201: "Brattle should conclude that any spectrum fee above US\$ 2.9 billion would be enough to make Devas worthless, if one were to accept its other assumptions, including a 10.3% discount rate."

384. The Tribunal has already ruled in its Award on Jurisdiction and Merits that it has been satisfactorily established that Devas was in a “box-out” situation. Due to interference which would have resulted from its activities in the spectrum allocated to it, there would have been no other competing application for operation in that spectrum.
385. Moreover, the Tribunal has to bear in mind the public interest policy that the Respondent’s officials expressed in seeing Devas pursuing its activities in the spectrum allocated to it and that leaving the spectrum severely underused, in case Devas could not secure a WPC License at a reasonable price, would have been looked upon as unacceptable from a public policy point of view.
386. The Tribunal’s conclusion in this respect is that Devas and the WPC would have entered into negotiation in order to arrive at a mutually satisfactory fee level for a WPC License for terrestrial re-use of spectrum, rather than leaving it unused. In that respect, a reference to the highest fee registered in the world outside India for a WPC License, as proposed by the Claimants, appears reasonable and will be used as a basis for establishing the damages suffered by Devas.

VI. AMOUNT OF COMPENSATION DUE

387. The Tribunal shall now turn to the calculation of damages on the basis of the “but for” scenario just described.
388. In summary, the amounts claimed by the Claimants in each possible “but for” scenario are the following:
- For a BWA and AV services business under the Reduced Spectrum Scenario and applying pre-award interest at the LIBOR rate + 4% as of November 30, 2017, CC/Devas and Telcom Devas claim USD 364 million each, and DEMPL claims USD 74 million;³⁶⁸
 - For an AV-only business under the Reduced Spectrum Scenario and applying a pre-award interest at the LIBOR rate + 4% as of November 30, 2017, CC/Devas and Telcom Devas claim USD 103 million each, and DEMPL claims USD 21 million;³⁶⁹
 - For a BWA and AV services business under the Original Spectrum Scenario and applying pre-award interest at the LIBOR rate + 4% as of April 26, 2018, CC/Devas and Telcom Devas claim USD 179 million each, and DEMPL claims USD 37 million;³⁷⁰ and

³⁶⁸ Third Expert Report by Mr. Benjamin Sacks dated November 29, 2017 (hereinafter, “**Sacks III**”) ¶ 16 and Table 5.

³⁶⁹ Sacks III ¶ 17 and Table 6.

³⁷⁰ Fourth Expert Report of Mr. Benjamin Sacks, dated April 26, 2018 (hereinafter, “**Sacks IV**”) ¶ 9, Table 3.

- For an AV-only business under the Original Spectrum Scenario and including pre-award interest at the LIBOR rate + 4% as of April 26, 2018, CC/Devas and Telcom Devas claim USD 61 million each and DEMPL claims USD 12 million.³⁷¹

389. The Respondent argues that Devas' business would have a negative value under all "but for" scenarios.³⁷²

A. WHETHER DEVAS, IN ITS OWN BUSINESS MODELS, EXPRESSED CASH FLOWS IN REAL OR NOMINAL TERMS

390. As a preliminary matter, the Tribunal will address a particular, disputed question of fact, which has a significant impact on the Tribunal's valuation: whether Devas, in its own business plans and notably in the Darwin Model, expressed cash flows in real or in nominal terms. Put simply, cash flows expressed in nominal terms (also referred to as current dollar terms) reflect the expected inflation, while cash flows expressed in real terms (also referred to as constant dollar terms) do not take account of future inflation. The accuracy of any valuation in this arbitration that is based on, or informed by, the figures stated in Devas' business plans depends on this threshold question.

391. The Tribunal recalls that, on June 1, 2018, pursuant to Procedural Order No. 12, the Respondent submitted a series of documents from the DT Arbitration, including a Witness Statement by Mr. Scheuermann of DT³⁷³ and an Expert Report of Mr. Greg Harman of FTI Consulting.³⁷⁴ According to the Respondent, these documents imply that the models developed by Devas (the Series-C Model, the Bravo Model and the Darwin Model) were expressed in nominal terms.³⁷⁵ The Claimants dispute that implication and maintain that their business plans were based on cash flows expressed in real terms.

1. The Claimants' Position

392. The Claimants dispute the Respondent's contention that Mr. Scheuermann's witness statement and the expert report from the DT Arbitration "show that the projected cash flows in the 'Darwin' model (and preceding Devas business models) may have been made on a 'nominal' basis, *i.e.* incorporating the effect on prices and costs of any future currency inflation, rather than a 'real'

³⁷¹ Sacks IV ¶ 10, Table 4.

³⁷² Flores I ¶¶ 170, 191, and Tables 4 and 5; Flores III ¶¶ 7, 29, 32-33; Second Supplemental Expert Report of Econ One Research, Inc. prepared by Dr. Daniel Flores, dated April 26, 2018 (hereinafter, "**Flores IV**") ¶ 15.

³⁷³ Ex. R-206, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018.

³⁷⁴ Ex. R-207, Expert Report of Greg Harman, FTI Consulting, dated May 4, 2018.

³⁷⁵ Respondent's letter to the Tribunal dated June 1, 2018.

basis (which excludes those effects).”³⁷⁶ According to the Claimants, the Respondent puts forward this theory “in the hope that this might lead to the application of a higher (nominal) discount rate to the cash flows in the Brattle damages model, with a corresponding reduction in Claimants’ damages.”³⁷⁷

393. The Claimants refer to two presentations made by Devas to DT in November 2007, which explained that their financial model was “built in REAL terms with adjustments for incremental real (relative) annual increases/decreases in prices/costs.”³⁷⁸ According to the Claimants, the cash flow projections in the Series-C Model (“business plan attached to the March 2008 Share Subscription Agreement with DT Asia”)³⁷⁹ were done in real terms, as was the case with the subsequent Bravo Model and Darwin Model.³⁸⁰ In the Claimants’ view, this is evidenced by the existing contemporaneous record.³⁸¹
394. In support of their position the Claimants further submitted a witness statement by Mr. Viswanathan, CEO of Devas (“**Mr. Viswanathan**”).³⁸² Mr. Viswanathan affirms that contemporaneous documents show that Devas modelled its cash flows in real terms³⁸³ and, while Devas worked with DT “to refine the company’s business model (culminating in the Darwin Model) (...) [he] do[es] not recall any discussion or agreement with DT that Devas would change its modelling assumption from real to nominal.” According to Mr. Viswanathan, he would recall such a modification, had it occurred, “because it would have required a wholesale change of the

³⁷⁶ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 1.

³⁷⁷ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 1.

³⁷⁸ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 2; quoting Ex. **C-246**, Devas Multimedia Pvt. Ltd, Financial Model Sensitivities & Adjustments (Nov. 3, 2007) (emphasis removed). See also Ex. **BR-225**, Business Plan Summary, Presentation by Devas to DT (Nov. 21, 2007).

³⁷⁹ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 2.

³⁸⁰ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 2.

³⁸¹ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 13-16. See also Hearing Transcript, Day 6, p. 1611:15-19; p. 1708:3-15.

³⁸² Fourth Witness Statement of Mr. Ramachandran Viswanathan, dated June 26, 2018 (hereinafter, “**Viswanathan IV**”).

³⁸³ Viswanathan IV ¶ 9.

assumptions in the Darwin Model to convert them from real to nominal, and resulted in significantly different cash flows.”³⁸⁴

395. The Claimants argue that there is no sign that Devas’ internal modelling methodology would have changed from real to nominal terms, because, if that were the case, “[t]he signs of such a conversion would be readily discernible in the cash flows.”³⁸⁵
396. The Claimants also dispute the relevance of Mr. Scheuermann’s witness statement for the present arbitration, arguing that “his testimony refers to an internal DT valuation process, not a Devas (much less Claimants’) valuation.”³⁸⁶ In the Claimants’ view, “it is stated in the clearest terms possible [in his witness statement] that he was not personally involved in the Darwin model. Most of his testimony relates to his internal evaluations.”³⁸⁷ Thus, the Claimants consider that there is “no discrepancy” between his testimony and their damages case.³⁸⁸ In any event, while it may be the case that DT produced internal valuations on a “nominal” basis (and it may even be the case that DT mistook Devas’ figures for nominal, rather than real, figures), nothing done by DT in its internal valuation process is attributable to either Claimants or Devas.³⁸⁹
397. Similarly, the Claimants dispute the relevance of Mr. Scheuermann’s oral testimony at the quantum hearing in the DT Arbitration, submitted into the record by the Respondent pursuant to Procedural Order No. 16.³⁹⁰ According to the Claimants, the “Respondent’s counsel carefully led Mr. Scheuermann to confirm it was his ‘understanding’ that ‘the business plans [he was] dealing with were in nominal terms’ (...) Mr. Scheuermann answered in the affirmative, but then clarified that his understanding was premised on DT’s own ‘normal’ practice of preparing DCF valuations in nominal terms.”³⁹¹

³⁸⁴ Viswanathan IV ¶ 9.

³⁸⁵ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 19.

³⁸⁶ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 35.

³⁸⁷ Hearing Transcript, Day 6, p. 1707:12-16.

³⁸⁸ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 34.

³⁸⁹ Claimants’ Preliminary Comments on India’s Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 4.

³⁹⁰ The document was erroneously numbered Procedural Order No. 15.

³⁹¹ Claimants’ Letter dated 10 June 2019, at page 1; referring to Ex. R-239, *Deutsche Telekom AG v. The Republic of India*, PCA Case No. 2014-10, Transcript of the Hearing on Quantum, 30 April 2019, Testimony of Axel Scheuermann (excerpt): “Q. Am I correct that, to your understanding, the cash flows in the business plans that you were dealing with were in nominal terms? A. Yes, that’s right. Q. And therefore,

398. In the Claimants' submission, Mr. Scheuermann's testimony confirms their position that, while DT may have had an internal practice of conducting valuations on a nominal basis, and DT may even have mistakenly taken Devas' figures for nominal, DT's internal valuation process is not attributable to Devas or the Claimants.³⁹²
399. Likewise, the Claimants argue that "[Mr.] Harman's selection of a valuation methodology for DT cannot disturb the contemporaneous documentary record showing Devas' management generated cash flows on a real (not nominal) basis."³⁹³
400. Furthermore, the Claimants argue that, while Mr. Flores had affirmed that he had concluded that the models were nominal "despite eight reports by him where he treated them as real,"³⁹⁴ Mr. Flores accepted in cross-examination that "he doesn't actually have a position on the issue."³⁹⁵

2. The Respondent's Position

401. The Respondent points out that Mr. Scheuermann's witness statement affirms that "[t]he [Series-C] model was in nominal terms, and therefore so too was the WACC."³⁹⁶ The Respondent also notes that Mr. Scheuermann applied a nominal discount rate when using the Bravo Model.³⁹⁷ Furthermore, the Respondent underscores that the expert report of Mr. Harman asserts that the Darwin Model is in nominal terms.³⁹⁸
402. Similarly, the Respondent relies on Mr. Scheuermann's oral testimony at the quantum hearing in the DT Arbitration, in which he confirmed his written testimony.³⁹⁹ According to the Respondent,

when you prepared and created your discount rate, you did it in nominal terms also? A. Exactly. So this is the normal way cf how do we and Deutsche Telekom prepare the DCF valuation, yes."

³⁹² Claimants' Letter dated 10 June 2019, at pages 1-2.

³⁹³ Claimants' Preliminary Comments on India's Submission Concerning Documents from the DT Proceeding, dated June 15, 2018 ¶ 44.

³⁹⁴ Hearing Transcript, Day 6, p. 1610:2-3.

³⁹⁵ Hearing Transcript, Day 6, p. 1610:4-5; p. 1707:17-25.

³⁹⁶ Respondent's letter to the Tribunal, dated June 1, 2018, at p. 2; quoting Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018, ¶ 32(d). See also Hearing Transcript, Day 1, p. 130:5-7.

³⁹⁷ Respondent's letter to the Tribunal, dated June 1, 2018, at p. 2; quoting Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018, ¶¶ 50-51. See also Hearing Transcript, Day 1, p. 130:7-9.

³⁹⁸ Respondent's letter to the Tribunal, dated June 1, 2018, at p. 2; quoting Ex. **R-207**, Expert Report of Greg Harman, FTI Consulting, dated May 4, 2018: "Figure A4-1 below presents an overview of the structure of the Darwin Model. The model's key output is a forecast of Devas' free cash flows in nominal terms (i.e. including inflation)." See also Hearing Transcript, Day 1, p. 130:9-10.

³⁹⁹ Respondent's letter to the Tribunal dated 3 June 2019. See also, Ex. **R-239**, *Deutsche Telekom AG v. The Republic of India*, PCA Case No. 2014-10, Transcript of the Hearing on Quantum, 30 April 2019, Testimony of Axel Scheuermann (excerpt): "*Q. Am I correct that, to your understanding, the cash flows in*

his written and oral testimony is relevant because the Claimants had put great reliance on DT's role in developing the cash flows, while now, as a result of the Respondent's arguments regarding the real/nominal issue, they are trying to "downplay" DT's significance and "discredit" Mr. Scheuermann.⁴⁰⁰

403. According to the Respondent, Mr. Scheuermann "is the only person who has submitted a witness statement in either arbitration who has personal knowledge and was personally involved in the development of those models."⁴⁰¹ The Respondent disputes that Mr. Viswanathan has any knowledge of the development of such models, as he "was at a high level of supervisory capacity."⁴⁰²
404. The Respondent argues that "if the DT testimony on the basic issue of real versus nominal cash flows in the Series-C, Bravo and Darwin Models is accurate, that in and of itself would mean that under Claimants' own figures on quantum in this case, the value of the proposed Devas business would be negative, wholly apart from all of the other basic flaws in Claimants' quantum analysis."⁴⁰³ [emphasis in original]
405. In particular, the Respondent underscores that "if the nominal equivalent of Mr. Sacks' 10.3% real discount rate (which Mr. Sacks himself calculates at 14.3%) were to be applied to the Brattle Model, even taking every single input into that model as correct, the net present value of Devas would be negative."⁴⁰⁴

3. The Tribunal's Analysis

406. The Respondent raises three arguments in support of its claim that the cash flows expressed in the models developed by Devas were in nominal rather than in real terms, which the Tribunal wishes briefly to recall.

the business plans that you were dealing with were in nominal terms? A. Yes, that's right. Q. And therefore, when you prepared and created your discount rate, you did it in nominal terms also? A. Exactly. So this is the normal way cf how do we and Deutsche Telekom prepare the DCF valuation, yes."

⁴⁰⁰ Respondent's letter to the Tribunal dated 3 June 2019, at page 2.

⁴⁰¹ Hearing Transcript, Day 6, pp. 1653:19-1654:1; p. 1717:13-23; p. 1718:11-17. See also, Respondent's letter to the Tribunal dated 3 June 2019

⁴⁰² Hearing Transcript, Day 6, p. 1654:16-24. See also, Respondent's letter to the Tribunal dated 3 June 2019.

⁴⁰³ Respondent's letter to the Tribunal, dated May 20, 2018, at p. 2.

⁴⁰⁴ Respondent's letter to the Tribunal, dated June 1, 2018, at p. 2. See also Hearing Transcript, Day 1, p. 95:13-22; p. 131:9-12; Day 6, pp. 1650:13-1651:7. See also, Respondent's letter to the Tribunal dated 3 June 2019.

407. Its first argument is based on Mr. Scheuermann's testimony in the DT Arbitration. Mr. Scheuermann was Head of Corporate Finance when DT started to look at the opportunity to invest in Devas. He was later appointed V.P. M&As at DT (2011). As head of Corporate Finance, he was leading the DT evaluation team when, in 2008, the Series-C model was developed jointly with Devas⁴⁰⁵ as a refinement of a previous business plan presented by Devas to DT in November 2007.⁴⁰⁶ In his Witness Statement, he declares that he was involved in the model's building and adjustment and he states that "[t]he model was in nominal terms, and therefore so too was the WACC."⁴⁰⁷ However, he adds that "[a]t the time the Darwin Model^[408] was agreed, I was not involved in its review as I had already completed my internal valuation and had gone back to working on other projects."⁴⁰⁹ DT's review of the Darwin Model was principally carried out by Mr. Larsen, a witness who testified in this case. Moreover, Mr. Scheuermann makes it clear⁴¹⁰ that DT had also asked him to lead DT's own valuation of Devas, which was not destined to be shared with Devas, but rather to help DT decide on the size of its investment in Devas.
408. The second argument raised by the Respondent is based on an Expert Report submitted on 4 May 2018 by Mr. Greg Harman, FTI Consulting in the DT Arbitration.⁴¹¹ The Respondent points out that Mr. Harman states that "Figure A4-1 below presents an overview of the structure of the Darwin Model. The model's key output is a forecast of Devas' free cash flows in nominal terms (*i.e.* including inflation)."⁴¹² The Respondent also quotes another section of that report where Mr. Harman states: "I have calculated the cost of equity on a nominal post-tax basis in INR terms."⁴¹³
409. The third argument raised by the Respondent in support of cash flows in nominal terms is based on an excerpt from the Darwin Excel file.⁴¹⁴ That excerpt shows that the Darwin model included an inflation forecast of 5% a year for the satellite lease cost.

⁴⁰⁵ Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶ 25.

⁴⁰⁶ Ex. **C-246**, Devas Multimedia Pvt. Ltd, Financial Model Sensitivities & Adjustments (Nov. 3, 2007).

⁴⁰⁷ Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 R-206, paragraph ¶ 31(d).

⁴⁰⁸ The Darwin Model was the latest refinement/adjustment of the Series-C Model.

⁴⁰⁹ Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶ 57.

⁴¹⁰ Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶¶ 23 and 27.

⁴¹¹ Ex. **R-207**, Expert Report of Greg Harman, FTI Consulting, dated May 4, 2018.

⁴¹² Ex. **R-207**, Expert Report of Greg Harman, FTI Consulting, dated May 4, 2018 ¶ A5.9, page 176.

⁴¹³ Ex. **R-207**, Expert Report of Greg Harman, FTI Consulting, dated May 4, 2018 ¶ A5.9, page 176.

⁴¹⁴ **BR-81**, Devas Darwin Model; Annex B to the Respondent's letter to the Tribunal, dated 25 July 2018.

410. For their part, the Claimants mention the following points in support of their view that the cash flows in the Darwin Model are in real terms.
411. First, they refer to Devas' Financial Models Sensitivities & Adjustments of November 3, 2007 (a document submitted to DT and subsequently jointly refined) which states categorically: "Model is built in REAL terms with adjustments for incremental real (relative) annual increases/decreases in prices/costs"⁴¹⁵
412. Secondly, the Claimants point out the statement of the CEO of Devas, Mr. Viswanathan to the effect that Devas "sought to exclude the effect of inflation (in what was then in India a rising and variable inflation environment)."⁴¹⁶
413. Thirdly, the Claimants refer to the computations made by Mr. Bazelon and Mr. Sacks to prove that the basis had not been changed from real to nominal between 2007 (date of Devas' first known business plan presented to DT) and 2009.
414. The Tribunal will now proceed with its analysis of the submissions made by the Parties.
415. As to Mr. Scheuermann's testimony in the DT Arbitration, the extent of his involvement is unclear for a man of his responsibility, and the Tribunal has no evidence on how much he was involved in the detailed assumptions and computations of the models used by Devas in the 2008 transaction. Rather, his evidence seems to relate to internal models prepared by DT. As stated by Mr. Scheuermann in his testimony, "I did not provide my valuation to Devas as it was only used for internal purposes to present to the DT Management and Supervisory Board to seek approval for DT's further investment in Devas."⁴¹⁷
416. As mentioned above, when invited by the Tribunal to appear before it, Mr. Scheuermann declined to do so, thus depriving the Parties and the Tribunal of the opportunity to question him about his statement. The Tribunal is not in a position to determine whether DT's own calculations of Devas' cash flows were in nominal rather than in real terms. It notes however that DT's own internal valuation of Devas in July 2009 established Devas' enterprise value at USD 1.15 billion.⁴¹⁸

⁴¹⁵ Ex. C-246, Devas Multimedia Pvt. Ltd, Financial Model Sensitivities & Adjustments (Nov. 3, 2007), p.4.

⁴¹⁶ Viswanathan IV ¶¶ 6-9.

⁴¹⁷ Ex. R-206, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶ 55.

⁴¹⁸ Ex. R-206, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶ 55.

417. As to the expert report of Mr. Harman in the DT Arbitration,⁴¹⁹ his assertion that the Darwin Model is in nominal terms and that he used that basis to make his analysis is of little probative value. He states in several instances that he retains the Darwin Model assumptions and posits that it is stated in nominal terms, as if it were obvious. However, paragraphs 4.15 to 4.27 of his report make it clear that the Darwin Model was the end-product of a series of refinements and adjustments made to Devas' original business plan presented to DT in November 2007. This original business plan was categorically presented as prepared in real terms.⁴²⁰ Mr. Harman does not offer a convincing personal analysis that either Devas was originally mistaken or that the model shifted from real to nominal when being refined. He just seems to take it for granted that the Darwin Model was in nominal terms. Moreover, he states that the assumptions underlying the model were reasonable because he was told as much. For example, he writes: "[f]rom 2011, I assume that the unit costs above would evolve in line with the escalation factors considered in the Darwin Model. Dr Larsen considers that these assumptions remained appropriate"; also "[t]he Darwin Model projected prices to remain constant up to two years after launch in DG1 and then to decline at a rate of 0.5% per quarter (*i.e.* 2.0% per annum). I retain the Darwin Model's price trend assumptions for the following reasons: (1) the pricing assumption reflect (sic) Devas contemporaneous market expectations and Dr Larsen considered the inputs in the model were reasonable."⁴²¹ There is nothing in the above to prove that the Darwin Model was indeed stated in nominal terms. The Tribunal notes that the Respondent did not request the appearance of Mr. Harman and that, while the Respondent indicated in its transmission letter that it did not agree with the rest of his report, the Tribunal cannot but notice that, even if Mr. Harman's calculations were made in nominal terms in his DCF analysis, he nonetheless arrived at the conclusion that Devas had an enterprise value of USD 1.618 billion⁴²² on February 17, 2011 (the Valuation Date).
418. The Tribunal notes that Mr. Brent Kaczmarek, who was acting as a claimant expert in the ICC Arbitration, also took the Darwin Model as the starting base for his evaluation. He wrote in his paragraph 132: "[m]ost costs and revenues are modelled in local currency. (...) The model also excludes inflation. Accordingly, the model projects revenues and costs in real terms (*i.e.* net of inflation)."⁴²³ When adjusting the model "to reflect new information as of 25 February 2011 rather than mid-2009," Mr. Kaczmarek did it in real terms: "[w]e projected both the retail and enterprise

⁴¹⁹ Ex. **R-207**, Expert Report of Greg Harman, FTI Consulting, dated May 4, 2018.

⁴²⁰ See Ex. **C-246**, Devas Multimedia Pvt. Ltd, Financial Model Sensitivities & Adjustments (Nov. 3, 2007), p. 4.

⁴²¹ Ex. **R-207**, Expert Report of Greg Harman, FTI Consulting, dated May 4, 2018 ¶¶ A4.11 and A 4.41.

⁴²² Id. at ¶¶ 5.70 and 5.71 and p. iv.

⁴²³ **EO-194**, Expert Report of Brent C. Kaczmarek, CFA, dated 20 February 2012 (Appendix to Flores II).

BWA prices to drop 2 percent annually in real terms in accordance with Devas/DT's contemporaneous expectations (...) We also project the AV prices to drop 2 percent annually in real terms." The opinion is the opposite of Mr. Harman's opinion, but the Tribunal notes that there is no more "proof" in Mr. Kaczmarek's report than in Mr. Harman's report.

419. Faced with these contradictory assertions, the Tribunal found it particularly important to look for convincing evidence within the model itself. More precisely, the Tribunal examined the Brattle Model (prepared by Mr. Bazelon and Mr. Sacks) submitted by the Claimants,⁴²⁴ rather than directly the Darwin Model, keeping in mind that the Brattle Model is the latest update of the Darwin Model. The Brattle Model is indeed the one underpinning the quantitative claim.
420. In this regard, the Tribunal notes the following with regard to the Respondent's third argument quoted above in paragraph 409 (*i.e.* that the Darwin Excel file⁴²⁵ shows that the Darwin model included an inflation forecast of 5% a year for the satellite lease cost). The Tribunal notes that in the Devas Agreement,⁴²⁶ it is stated that "[a]ll the lease payments, which are specified in this contract are subject to adjustment for price variation as per the following formula, depending on the year for which the lease payment is applicable"; said formula is based on the wholesale price index. It can be inferred that the "inflation rate" included in the Darwin Model for leases reflects a contractual obligation related to that specific element, rather than the intent to systematically reason in terms of inflation-adjusted figures. In the original Darwin Model, this cost escalation was supposed to start in 2010. Second, and most importantly, the Tribunal notes that the Brattle Excel file⁴²⁷ does not show any inflation on the satellite lease cost; it shows only the adjustment prescribed in paragraph 2-1-2-1 of the Lease Agreement,⁴²⁸ which is an increase in payment when cash flows become positive. This particular adjustment is not at all related to inflation and is a one-time, pre-determined adjustment. The evidence thus shows that satellite lease costs are stated in real terms in the Brattle Excel file.

⁴²⁴ **BR-286**, Brattle Workpaper X-R5 - Discounted Cash Flows Model (Original Case) - Oversubscription Ratio Sensitivity.

⁴²⁵ **BR-81**, Devas Darwin Model; Annex B to the Respondent's letter to the Tribunal, 26 July 2018.

⁴²⁶ Ex. **C-16**, Agreement for the Lease of Space Segment Capacity on ISRO/ANTRIX S-Band Spacecraft between Antrix Corp. Ltd. and Devas Multimedia Private Ltd. (Agreement No. ANT/203/DEVAS/2005), (January 28, 2005), Exhibit B, ¶ 2-1-2-A, Lease Fees Variation Provision.

⁴²⁷ **BR-286**, Brattle Workpaper X-R5 - Discounted Cash Flows Model (Original Case) - Oversubscription Ratio Sensitivity, line 22 of their Satellite tab.

⁴²⁸ Ex. **C-16**, Agreement for the Lease of Space Segment Capacity on ISRO/ANTRIX S-Band Spacecraft between Antrix Corp. Ltd. and Devas Multimedia Private Ltd. (Agreement No. ANT/203/DEVAS/2005), (January 28, 2005), Exhibit B.

421. An examination of personnel costs in the Brattle Model supports the idea that the model is expressed in real terms: the SG&A Inputs tab⁴²⁹ shows that DMPL personnel costs, and other general expenses, were set to increase at the rate of 4% per year (lines 21 to 87), whereas DMAI personnel costs and other general costs were expected to increase by 1% per year (lines 94 to 114). The 4% rate is crucial: it must be determined whether it is a real rate of increase (above the rate of inflation) or a nominal one. Publicly available statistics about India⁴³⁰ reveal that both before and after 2009 and 2011, the rate of salary increases in India was much higher than the general inflation rate, yielding positive real rates of salary increases. Salary nominal growth rates have hovered around 10%-12% between 2006 and 2011, and the general rate of inflation (CPI) was about 7.3%. The real rate of salary increases therefore stood around 4%. It was thus perfectly logical to include in the Brattle model an expected real increase of 4% per year. This figure could by no means represent a nominal growth rate as it stood far below observed nominal rates. Of course, if rates of increase were stated in real terms, the cash-flows were stated in real (constant) rupees or dollars.
422. Finally, the Tribunal considers the Claimants' argument persuasive that there does not appear to have been any conversion of the economic modelling underlying the Darwin Model from real terms into nominal terms between 2007 and 2009.⁴³¹ Various figures contained in the 2009 model⁴³² would have been higher, had such a conversion to nominal terms taken place.⁴³³ It may reasonably be inferred that the model was and always remained expressed in real terms.
423. Contrary to the situation concerning Mr. Scheuermann, Mr. Viswanathan appeared before the Tribunal and his testimony both in writing and upon cross-examination was quite categorical as to his knowledge that the models used by Devas were in real and not nominal terms.⁴³⁴
424. Finally, the Tribunal notes that, in the ICC Arbitration, Mr. Kaczmarek's Expert Report stated that the Devas models were made on a real terms basis and that this view was not challenged by

⁴²⁹ **BR-286**, Brattle Workpaper X-R5 - Discounted Cash Flows Model (Original Case) - Oversubscription Ratio Sensitivity.

⁴³⁰ The following articles provide both the figures and some comments: The new normal : India's salary increase story, by S. Roy and L. Gurnani, Aon Consulting's Total rewards Quarterly, vol. 6, issue 1; salaries over the last decade – growing yet greying, by R. Chaudary, Business Today, April 9, 2018; Historic Inflation – India-CPI Inflation, Inflation.eu – Worldwide Inflation Data, December 1, 2018; India's Economic Growth Produces Real Wage Rises of 5% A Year, by T. Worstall, Forbes, February 23, 2016.

⁴³¹ Hearing Transcript, Day 6, p. 1708:3-15; Claimants' Closing Presentation, slide 144.

⁴³² Ex. **BR-81**, Devas Darwin Model; Annex B to the Respondent's letter to the Tribunal dated 25 July 2018.

⁴³³ In comparison to the figures used in 2007, see Ex. **BR-225**, Business Plan Summary, Presentation by Devas to DT (Nov. 21, 2007).

⁴³⁴ Viswanathan IV; Hearing Transcript, Day 1, p. 276:21-23.

the Respondent at the time. Mr. Flores, the Respondent's expert in this case as well as in the ICC Arbitration wrote some eight reports in the ICC Arbitration and in this case without questioning whether the Devas models were based on real terms. When questioned about this matter during the Hearing on Quantum in this case, he stated that it was not immediately apparent to him whether the Darwin Model was in real or nominal terms but that he was now "leaning towards" nominal terms but had "no 100% certainty."⁴³⁵

425. On the basis of the written evidence submitted to it and the oral testimony of Mr. Viswanathan before the Tribunal, the Tribunal has come to the conclusion that the cash flows in the Series-C, Bravo and Darwin Models were in real and not in nominal terms.

B. VALUATION METHODOLOGY

1. The Claimants' Position

426. The Claimants' experts, Mr. Sacks and Mr. Bazelon, use a combination of the Income Approach and the Market Approach to determine Devas' fair market value on the valuation date.⁴³⁶ In particular, Mr. Sacks values Devas' combined AV/BWA business using DCF valuation, and Mr. Bazelon values the BWA business segment alone using a Market Approach.⁴³⁷ Afterwards, Mr. Sacks calculates the value of Devas using the average of the values produced through these valuation methods.⁴³⁸

a. Methodology as Developed in relation to the Reduced Spectrum Case

427. The Claimants contend that "the particular income method used by Brattle, the venture capital method, is specifically tailored to measuring the value of young companies in Devas' situation."⁴³⁹ According to the Claimants, such method, as laid out by Professor Metrick, "calls for a three-stage test.
428. According to the Claimants, "[s]tep 1 is to take the business plan and estimate the value that BWA/AV business would have had once it reaches what is called the venture capitalist exit point

⁴³⁵ Hearing Transcript, Day 5, p. 1498:1-12.

⁴³⁶ Claimants' Submission on Quantum ¶ 10.

⁴³⁷ Claimants' Submission on Quantum ¶ 66.

⁴³⁸ Claimants' Submission on Quantum ¶ 10.

⁴³⁹ Hearing Transcript, Day 1, p. 38:15-19.

or an IPO,” which Devas was projected to reach in 2013.⁴⁴⁰ The Claimants affirm that, accordingly, Mr. “Sacks takes the cash flows and applied the same discount rate as would apply to a mature Indian telecommunications company to get a mature exit event value.”⁴⁴¹

429. “Step 2 takes into account the risk of failure because he then makes a very significant adjustment called the ‘pre-revenue adjustment.’ That reduces the cash flows to reflect the chance the company would not make it to maturity.”⁴⁴² The Claimants point out that pursuant to “published economic studies (...) we’re able to see the compilation of company failure and maturity rates (...) one can derive the 39 percent pre-revenue adjustment appropriate to this business”⁴⁴³ and applied by Mr. Sacks.
430. Finally, the Claimants explain that the step 3 is to “bring (...) that value, which is expressed at 2013 terms, back to the takings date. You discount that valuation back in time from a 2013 value to a 2011 takings value, using the venture company cost of capital.”⁴⁴⁴
431. Mr. Sacks takes from Mr. Bazelon’s report the ten years of “but for” cash flows produced by the Darwin model and Mr. Bazelon’s adjustments to it;⁴⁴⁵ projects cash flows from year ten onwards using a terminal growth rate of 4.5%;⁴⁴⁶ applies a pre-revenue adjustment to the cash flows of 39% to take into account the possibility that Devas might fail (“**Pre-Revenue Adjustment**” or “**PRA**”);⁴⁴⁷ determines the discount rate (at 10.3%) using the Capital Asset Pricing Model (“**CAPM**”);⁴⁴⁸ and subtracts the net cost of an assumed obligation to provide services in the prescribed coverage areas (“**Build-Out Requirement**”).⁴⁴⁹

⁴⁴⁰ Hearing Transcript, Day 1, p. 44:6-11.

⁴⁴¹ Hearing Transcript, Day 1, p. 44:12-15.

⁴⁴² Hearing Transcript, Day 1, p. 44:16-20.

⁴⁴³ Hearing Transcript, Day 1, pp. 44:21-45:2.

⁴⁴⁴ Hearing Transcript, Day 1, p. 45:7-13.

⁴⁴⁵ See Claimants’ Submission on Quantum ¶ 67: these adjustments include the assumption that Devas would have been charged an annual Terrestrial Re-Use Fee commensurate with the highest internationally observable terrestrial re-use fee anywhere in the world in 2011 (*i.e.* the equivalent to that of Slovenia), and also the modifications which Devas would have made on its operational plan in order to adapt it to a reduced spectrum of 25.2 MHz available to offer AV and BWA services. For further detail, see Claimants’ Submission on Quantum ¶¶ 73-91; and Bazelon I, section III.

⁴⁴⁶ See Sacks I ¶¶ 61-64.

⁴⁴⁷ See Sacks I, section IV.E (on the build-out requirement) and section IV.C (on the terrestrial re-use fee, pre-revenue adjustment and renegotiation risk).

⁴⁴⁸ See Sacks I, section IV.D.

⁴⁴⁹ Claimants’ Submission on Quantum ¶¶ 67, 95-97. See also Sacks I, section IV.E.

432. On that basis, Mr. Sacks concludes that the fair market value of Devas in the Reduced Spectrum Scenario is USD 1.5 billion.⁴⁵⁰

433. Separately, applying a Market Approach, Mr. Bazelon calculates the value of Devas' BWA segment.⁴⁵¹ The Claimants assert that he demonstrates that the value of Devas' BWA segment can be benchmarked against the June 2010 BWA spectrum auctions in India as such market provides a highly reliable comparable.⁴⁵² Accordingly,

Dr. Bazelon equates the USD 2.74 billion paid by Infotel for a 20 MHz national portfolio as a baseline comparable, a reliable measure of the cost of a business license to provide BWA services. In other words, in 2010, a third party like Infotel was willing to pay USD 2.74 billion (and undertake costly "build-out" requirements) to become a BWA service provider.⁴⁵³

434. On this basis, he adjusts Infotel's baseline price to take into account the differences with Devas' rights and concludes that Devas' BWA segment had a fair market value of approximately USD 1.7 billion in the Reduced Spectrum Scenario as of the valuation date.⁴⁵⁴

435. The Claimants' experts also calculate Devas' value for the alternative scenario of an AV services-only business. In this case, Mr. Bazelon uses the Darwin Model, removing all cash flows related to BWA segment but retaining all satellite-related costs and 50% of the shared personnel, general and administrative expenses.⁴⁵⁵ Mr. Bazelon also assumes that licensing costs for terrestrial transmission of AV content would be 4% of gross revenues, as indicated by TRAI in the 2005 guidelines and obtains the cash flows.⁴⁵⁶ The Claimants note that, "[b]ecause the AV model already includes a 6% adjusted gross revenue ISP fee, no additional licensing costs are necessary."⁴⁵⁷ Mr. Sacks applies the same discount rate, terminal growth rate and pre-revenue

⁴⁵⁰ Claimants' Submission on Quantum ¶¶ 96.

⁴⁵¹ Claimants' Submission on Quantum ¶¶ 98.

⁴⁵² Claimants' Submission on Quantum ¶ 100. The Claimants argue that the auction enabled the winning bidders to provide BWA services similar to those that Devas had the ability to provide as a result of its "box-out" position; the auction took place only months before the valuation date; took place in India; and involved spectrum very close to the S-band spectrum allocated to Devas. See also Bazelon I ¶ 139.

⁴⁵³ Claimants' Submission on Quantum ¶ 101.

⁴⁵⁴ Claimants' Submission on Quantum ¶ 102; Bazelon I ¶ 89.

⁴⁵⁵ Claimants' Submission on Quantum ¶ 107.

⁴⁵⁶ Claimants' Submission on Quantum ¶ 107.

⁴⁵⁷ Claimants' Submission on Quantum ¶ 107.

adjustment as used in the valuation of the combined AV/BWA business and obtains a value of USD 469 million for an AV-only business.⁴⁵⁸

436. As it will be discussed below (under the heading of quantification), the Claimants' experts have accepted some of the Respondents' criticisms to their valuation and introduced certain downward adjustments in their second experts reports, submitted by the Claimants with their Reply on Quantum.
437. The Claimants respond to the Respondent's criticism concerning the use of DCF for a start-up company like Devas, arguing that "Brattle's DCF model is based upon contemporaneous, real-world business records and projections" and constitutes a sufficient basis for using the DCF method in this case, especially as there is no doubt about the demand for Devas' services.⁴⁵⁹
438. Nevertheless, the Claimants acknowledge that the ICC Tribunal was not prepared to accept the use of a DCF valuation, although they disagree with the view that DCF methodology is too speculative in this case.⁴⁶⁰ In particular, the Claimants contend that "there are numerous economists who have endorsed a DCF method even for early stage companies."⁴⁶¹
439. Likewise, the Claimants criticize the Respondent's reliance on the World Bank Guidelines to deny the appropriateness of using DCF by arguing that these Guidelines cannot be regarded as international valuation standards.⁴⁶² The Claimants refer to Professor Marboe's criticism thereto, who, in the Claimants submission, noted that "not only are these not cited in the economic literature, they themselves are mere proposals by committee of lawyers at the World Bank over 20 years ago"⁴⁶³ and affirmed that "[t]o the extent they purport to restrict the use of DCF to a 'going concern'" the approach "is not entirely in accordance with international valuation standards."⁴⁶⁴
440. The Claimants affirm that, the fact that Devas did not have a track record of revenue generation when the expropriation took place does not exclude the use of an income approach. The Claimants refer to scholarly analysis noting that

⁴⁵⁸ Claimants' Submission on Quantum ¶ 109.

⁴⁵⁹ Claimants' Reply on Quantum ¶ 27.

⁴⁶⁰ Claimants' Reply on Quantum, footnote 30.

⁴⁶¹ Hearing Transcript, Day 1, p. 39:10-11.

⁴⁶² Hearing Transcript, Day 6, p. 1600:10-12.

⁴⁶³ Hearing Transcript, Day 6, p. 1601:14-18.

⁴⁶⁴ Hearing Transcript, Day 6, p. 1602:1-5.

[a] number of investment tribunals applied an income valuation approach also without a track record. This is not only true for cases where the valuation could be based on solidly formulated long-term contracts but also in cases where the future profitability depended on economic circumstances, such as consumers' demands and expenditures.⁴⁶⁵

b. Methodology as Applied to the Original Spectrum Case

441. In his third expert report, submitted in response to the Tribunal's letter dated November 13, 2017, Mr. Bazelon addresses the valuation of Devas in the Original Spectrum Scenario. He notes that the DCF valuation spreadsheet which accompanied his first expert report allowed the viewer to switch the scenario under analysis between the cash flows and valuation results for the Original Spectrum Scenario and the Reduced Spectrum Scenario; hence all the information necessary to develop cash flow projections under the Original Spectrum Scenario was included in his first report.⁴⁶⁶
442. Mr. Bazelon limits his discussion to aspects that differ from those discussed in respect of the Reduced Spectrum Scenario.⁴⁶⁷ He notes that in the Original Spectrum Scenario Devas would have leased transponder capacity on two satellites, both of which were nearly completed by mid-2010.⁴⁶⁸ Thus, his Original Spectrum model incorporates upfront capacity reservation fees and annual lease fees for both satellites at the levels specified in the Devas Agreement.⁴⁶⁹
443. Mr. Bazelon points out that, with the exception of the timing of the first satellite launch and the use of two satellites instead of one, he maintains all other structural aspects of the cash flows model in the Original Spectrum Scenario identical to those of the Reduced Spectrum Scenario, as they are based on Devas' own Darwin Model.⁴⁷⁰
444. As he considers that Devas would have been able to offer the same BWA services and almost the same AV services in the Reduced Spectrum Scenario (due to technological reconfigurations) as in the Original Spectrum Scenario, "the pricing assumptions are the same (...) with one exception: the price of AV services in rural areas."⁴⁷¹ In the Original Spectrum Scenario Devas would have

⁴⁶⁵ Claimants' Submission on Quantum ¶ 97 quoting **CL-123**, Marboe at 263. See also Hearing Transcript, Day 1, pp. 39:15-40:4; Day 6, pp. 1600:21-1601:11.

⁴⁶⁶ Bazelon III ¶ 5, see also Ex. **BR-256**: Brattle Workpaper H-R1 – Revised Discounted Cash Flows Model, tab. "Control Screen."

⁴⁶⁷ Bazelon III ¶ 15.

⁴⁶⁸ Bazelon III ¶ 16.

⁴⁶⁹ Bazelon III ¶ 16.

⁴⁷⁰ Bazelon III ¶ 17.

⁴⁷¹ Bazelon III ¶ 18.

been able to provide all the initially envisaged AV services also in rural areas, such that prices for these services would not have been reduced by half.⁴⁷² The BWA network configuration and equipment costs would have been the same under both scenarios.⁴⁷³

445. Moreover, the Claimants assume that in the Original Spectrum Scenario the launch of AV services in urban areas would not have been delayed. Mr. Bazelon has thus been instructed to assume that its roll-out would have started in October 2010, shortly after the satellite launch would have taken place in July 2010, and otherwise maintains the staggered roll-out pattern assumed in the Darwin Model.⁴⁷⁴ Accordingly,

with these two exceptions – full AV service pricing in rural areas and an earlier start of the AV service – the description in my First Report of Devas’s AV and BWA services, prices, and penetration rates remains applicable in the Original Spectrum Case.⁴⁷⁵

446. Mr. Bazelon also adopts the operating cost structure and estimates reflected in the Darwin Model as in the Reduced Spectrum Scenario.⁴⁷⁶ In the Original Spectrum Scenario he assumes the payment of leasing fees for two satellites instead of only one, because in this scenario both satellites would be used.⁴⁷⁷ Furthermore, he assumes the yearly payment of a terrestrial re-use fee for 20 Mhz of spectrum of USD 289.4 million.⁴⁷⁸
447. The Market Approach used by Mr. Bazelon to value the BWA business remains unchanged in the Original Spectrum Scenario and results in an estimate of USD 1.7 billion.⁴⁷⁹
448. Likewise, Mr. Sacks relies on Mr. Bazelon’s cash flow projections to perform a DCF valuation of Devas under the Original Spectrum Scenario.⁴⁸⁰ Mr. Sacks contends that the following steps over the cash flow projections developed by Mr. Bazelon and applied in the Reduced Spectrum Scenario remain unchanged for valuation purposes under the Original Spectrum Scenario: (i) projecting cash flows from year 10 forward using a terminal growth rate of 4.5 %, which is consistent with India’s expected GDP growth rate; (ii) conservatively modelling that Devas would

⁴⁷² Bazelon III ¶ 18.

⁴⁷³ Bazelon III ¶ 22.

⁴⁷⁴ Bazelon III ¶ 19.

⁴⁷⁵ Bazelon III ¶ 20.

⁴⁷⁶ Bazelon III ¶ 23.

⁴⁷⁷ Bazelon III ¶ 32.

⁴⁷⁸ Bazelon III ¶ 34; Hearing Transcript, Day 1, pp. 42:12-43:2.

⁴⁷⁹ Bazelon III ¶¶ 40-41; Hearing Transcript, Day 1, pp. 46:20-47:4.

⁴⁸⁰ Bazelon III ¶ 36.

not have cash flows after the renewed Devas Agreement expired in 24 years; (iii) calculating the discount rate applicable to Devas as if it were a mature, public company, and using that discount rate to calculate the value of Devas; (iv) calculating the fair market value of Devas as of February 17, 2011 by acknowledging its status as a young company, and thereby using a method akin to the well-established “venture capital method” [*i.e.* by applying a pre-revenue adjustment for the probability of failure, and discounting based on the cost of capital]; (v) reducing the fair market value of Devas by the cost of the Build-Out requirement to reflect the risk that such a requirement would be imposed on Devas.⁴⁸¹

449. Pursuant to the Tribunal’s letter dated November 13, 2017, the Parties also had the opportunity to submit preliminary comments on each other’s alternative calculations. Accordingly, the Claimants provided their views on the Respondent’s alternative calculations within their April 26, 2018 submissions,⁴⁸² including the submission of supplemental expert reports by Mr. Bazelon⁴⁸³ and Mr. Sacks.⁴⁸⁴
450. The Claimants maintain that, in sustaining that Devas lacked any value, Mr. Flores ignores the Tribunal’s finding that Devas had “significant value.”⁴⁸⁵ The Claimants affirm that Mr. Flores’ main theme in purporting to justify his negative valuation of Devas relates to licensing, and reiterate that his “arguments ignore Devas’s box-out position – *an issue already decided by the Tribunal in the Merits Award* (...) as well as international licensing norms in this area and India’s own policies.”⁴⁸⁶ [emphasis in original, footnotes omitted]
451. Furthermore, the Claimants argue that Mr. Flores (i) “inappropriately double-counts risks”;⁴⁸⁷ (ii) “misrepresents core economic concepts,” notably the concept of “target return”;⁴⁸⁸ (iii) “tries to hide that delays in satellite launch likely increase Devas’s value, and even if they did not, any diminution in value could be significantly mitigated by not delaying the entire BWA roll-out by

⁴⁸¹ Sacks III ¶¶ 8-9.

⁴⁸² See Claimants’ Comments on Alternative Valuation Calculations and Response to New Points and Authorities Raised for the First Time in Rejoinder, dated April 26, 2018 (hereinafter, “**Claimants’ Comments on Alternative Valuation Calculations**”).

⁴⁸³ See Fourth Expert Report of Dr. Coleman Bazelon, dated April 26, 2018 (hereinafter, “**Bazelon IV**”).

⁴⁸⁴ See Sacks IV.

⁴⁸⁵ Claimants’ Comments on Alternative Valuation Calculations ¶ 9.

⁴⁸⁶ Claimants’ Comments on Alternative Valuation Calculations ¶ 10, referring to Bazelon IV, Section II [¶¶ 8-21]; and Merits Award ¶ 209. See also Sacks IV ¶¶ 32-46.

⁴⁸⁷ Claimants’ Comments on Alternative Valuation Calculations ¶ 12, referring to Flores III ¶ 21. See also Sacks IV ¶¶ 36-40, 45-60.

⁴⁸⁸ Claimants’ Comments on Alternative Valuation Calculations ¶ 12. See also Sacks IV ¶¶ 67-89.

as much as the satellite delay”;⁴⁸⁹ and (iv) “fails to consider any mitigation or rational response to a claimed ‘sensitivity’ or cash flow ‘correction’.”⁴⁹⁰

2. Respondent’s Position

452. The Respondent rejects the applicability of a DCF methodology to value Devas’ business under both the Reduced Spectrum Scenario and the Original Spectrum Scenario, as described in the following paragraphs.

453. Furthermore, the Respondent underscores that the Claimants “had not presented any claim based on any recognised methodology other than DCF,”⁴⁹¹ so “[t]he main question before [the Tribunal], therefore, is whether Claimants have carried their burden of proving that their DCF valuation for either the AV/BWA business or the AV-only business is reasonable.”⁴⁹² The Respondent disputes this, as described in the following paragraphs.

a. Methodology as Developed in relation to the Reduced Spectrum Case

454. The Respondent contends that a DCF “approach is highly suspect in the circumstances of this case, which involves a start-up company with no track record in a highly regulated industry with significant risks and uncertainties.”⁴⁹³ Furthermore, the Respondent claims that not only Devas itself did not have a track record but that this is “also true for the type of business that Devas wanted to embark on in India.”⁴⁹⁴

455. The Respondent quotes a series of authorities in support of its position, including *Metalclad Corporation v. The United Mexican States*,⁴⁹⁵ *Southern Pacific Properties (Middle East) Limited*

⁴⁸⁹ Claimants’ Comments on Alternative Valuation Calculations ¶ 12, referring to Flores III ¶ 18, Table 2; ¶ 23, Table 4. See also Bazelon IV ¶¶ 50-56; Sacks IV ¶ 116.

⁴⁹⁰ Claimants’ Comments on Alternative Valuation Calculations ¶ 12, referring to Flores III ¶ 18, Table 2; ¶ 23, Table 4. See also Bazelon IV ¶¶ 58-72; Sacks IV ¶ 111-122.

⁴⁹¹ Hearing Transcript, Day 6, pp. 1631:24-1632:1; p. 1643:18-21; p. 1693:10-15; pp. 1712:23-1713:5.

⁴⁹² Hearing Transcript, Day 6, p. 1632:5-8.

⁴⁹³ Respondent’s Counter-Memorial on Quantum ¶ 50. See also Hearing Transcript, Day 1, pp. 82:8-17, pp. 83:18-84:9; Day 6, p. 1633:7-9.

⁴⁹⁴ Hearing Transcript, Day 1, p. 84:14-20; Day 6, p. 1633:7-14.

⁴⁹⁵ Respondent’s Counter-Memorial on Quantum, footnote 113; quoting Ex. CL-23, ICSID Case No. ARB(AF)/97/1, Award, August 30, 2000, 5 ICSID Reports 212 (2000) ¶¶120-121 (“Where the enterprise has not operated for a sufficiently long time to establish a performance record or where it has failed to make a profit, future profits cannot be used to determine going concern or fair market value (...) The Tribunal agrees with Mexico that a discounted cash flow analysis is inappropriate in the present case because the landfill was never operative and any award based on future profits would be wholly speculative.”).

v. Arab Republic of Egypt,⁴⁹⁶ *Waguih Elie George Siag and Clorinda Vecchi v. The Arab Republic of Egypt*⁴⁹⁷ and scholarly analysis. The Respondent underscores:

Arbitral practice has frequently rejected an income valuation approach [*i.e.* the DCF approach] when the company was not an ongoing business with a proven record of profitability. The main argument was that without a past record future calculation would be wholly speculative.⁴⁹⁸

456. The Respondent further asserts that the high degree of volatility reflected by the DCF model upon which the Claimants rely demonstrates the instability and lack of reliability of the DCF in the circumstances of this case.⁴⁹⁹ The Respondent underscores that this position was adopted by the ICC Tribunal, which held:

[A]n aspect of the DCF methodology that the tribunal finds particularly troubling in this case is that small variations in the assumptions used (...) can dramatically and unrealistically change Devas' value (...) The Tribunal understands that the reason for the extreme sensitivity of the DCF methodology in this case is the length of the period that it would take for Devas to become cash positive (...) it makes Devas' DCF methodology an unrealistic and unreliable vehicle for determining its damages.⁵⁰⁰

457. The Respondent also criticizes the market approach advocated by the Claimants by asserting that it consists of a circular argument:⁵⁰¹ it assumes that Devas had the right to use the satellite spectrum terrestrially at an annual fee equivalent to the one applied in Slovenia rather than an upfront spectrum fee commensurate with the price paid by its competitors at the 2010 BWA auction, which is the position of Indian regulators.⁵⁰²

⁴⁹⁶ Respondent's Counter-Memorial on Quantum, footnote 113; quoting *Southern Pacific Properties (Middle East) Limited v. Arab Republic of Egypt*, ICSID Case No. ARB/84/3, Award on the Merits, May 20, 1992 ¶ 188 ("In the Tribunal's view, the DCF method is not appropriate for determining fair compensation in this case because the project was not in existence for a sufficient period of time to generate the data necessary for a meaningful DCF calculation").

⁴⁹⁷ Respondent's Counter-Memorial on Quantum, footnote 113; quoting Ex **CL-32**, *Waguih Elie George Siag and Clorinda Vecchi v. The Arab Republic of Egypt*, ICISD Case No ARB/05/15, Award, June 1, 2009 ¶ 570 ("Points such as those just mentioned tend to reinforce the wisdom in the established reluctance of tribunals such as this one to utilise DCF analyses for "young" businesses lacking a long track record of established trading. In all probability that reluctance ought to be even more pronounced in cases such as the present where the business is still in its relatively early development phase and has not trading history at all").

⁴⁹⁸ Respondent's Counter-Memorial on Quantum, footnote 113; quoting Ex. **R-170**, Irmgard Marboe, *Calculation of Compensation and Damages in International Investment Law* (Oxford University Press 2009) at 260. See also Hearing Transcript, Day 6, p. 1642:14-20.

⁴⁹⁹ Respondent's Counter-Memorial on Quantum ¶ 50.

⁵⁰⁰ Respondent's Rejoinder on Quantum ¶ 86, quoting Ex **C-258**, ICC Award ¶¶ 371-375. See also Hearing Transcript, Day 1, pp. 91:23-92:6.

⁵⁰¹ Respondent's Counter-Memorial on Quantum ¶ 67; Hearing Transcript, Day 6, p. 1630:16-21.

⁵⁰² Respondent's Counter-Memorial on Quantum ¶ 67.

458. Therefore, the Claimants' market approach assumes that Devas had the right to use the spectrum terrestrially, although it was not authorised to do so, and at a fee that would have been contrary to India's level playing field policy.⁵⁰³ The Respondent contends that a willing buyer would not have assumed that it would be permitted to pay a lower spectrum charge than its competitors had to pay at an auction.⁵⁰⁴

b. Methodology as Applied to the Original Spectrum Case

459. In his supplemental expert report, submitted in response to the Tribunal's letter dated November 13, 2017, Mr. Flores addresses the Claimants' experts' valuations under the Original Spectrum Scenario on the basis of the DCF models submitted with their second expert reports.⁵⁰⁵

460. Mr. Flores notes that, similarly to the Reduced Spectrum Scenario, the Claimants' experts' model in the Original Spectrum Scenario is highly sensitive to changes in inputs.⁵⁰⁶ He presents a tabular sensitivity analysis showing the impact on the Claimants' experts' DCF model of several assumptions, namely: (i) two year delay in operation; (ii) 10% fewer subscriptions; (iii) 10% higher costs; and (iv) 10% lower prices.⁵⁰⁷

461. Mr. Flores applies to the Original Spectrum Scenario the same corrections that he sets out in his second expert report and concludes that "as in the Reduced Spectrum Case, a hypothetical buyer would not have assigned value to either Devas' combined AV/BWA business or its AV-only business under the Original Spectrum Case."⁵⁰⁸

462. Pursuant to the Tribunal's letter dated November 13, 2017, the Respondent provided its views on the Claimants' alternative calculations within its April 26, 2018 submissions, including the provision of a second supplemental expert report of Mr. Flores.⁵⁰⁹ According to the Respondent,

Claimants' alternate valuation remains surrealistic in both the inputs into their cash flows and their use of an indefensible discount rate. As shown by Dr. Flores, the basic conclusion that no reasonable assumptions exist that would lead to a positive net present value for the

⁵⁰³ Respondent's Counter-Memorial on Quantum ¶ 67.

⁵⁰⁴ Respondent's Counter-Memorial on Quantum ¶ 50.

⁵⁰⁵ Flores III ¶ 5.

⁵⁰⁶ Flores III ¶ 23.

⁵⁰⁷ Flores III ¶ 23, Table 4.

⁵⁰⁸ Flores III ¶ 5.

⁵⁰⁹ See Respondent's Submission of April 26, 2018 ("Respondent's Submission of April 26, 2018"), including, as Annex A, Flores IV.

proposed Devas business remain intact.⁵¹⁰

463. The Respondent considers that the Claimants do not properly address its argument that a DCF valuation “is wholly inappropriate, as the proposed Devas business (...) had no track record of profitability whatsoever.”⁵¹¹ In this regard, the Respondent argues that the World Bank Guidelines on the Treatment of Foreign Direct Investment, case-law and commentaries make clear that this is the “quintessential example” of a case in which a DCF valuation should not be used,⁵¹² underscoring that the use of DCF was also rejected in the ICC Arbitration.⁵¹³ The Respondent rejects the Claimants’ criticisms of such guidelines.⁵¹⁴ Moreover, the Respondent disagrees with the Claimants’ contention that Devas “actually satisfies the objective criteria for a going concern as laid out in the guidelines,”⁵¹⁵ arguing that the World Bank Guidelines refer to the operating history of the business and not a preoperational business model.⁵¹⁶

464. Addressing the appropriateness of the “Original Spectrum Scenario,” the Respondent argues that

even proceeding on the assumption of only 60% military use of the spectrum in question, there would be no basis for awarding compensation by taking 40% of the value that the Devas business would have had (assuming that it had any value, which is not the case under any reasonable assumptions) if there had been no essential security interests whatsoever, as that would effectively ignore, and indeed contradict, the Tribunal’s finding that 60% of Respondent’s decision was justified by its essential security interests.⁵¹⁷

465. According to the Respondent, this must be why the Claimants in their original submissions on quantum, took the same approach as the Respondent and valued the proposed Devas business on the basis that only 40% of the spectrum would be available to it.⁵¹⁸

⁵¹⁰ Respondent’s submission of April 26, 2018, at page 2, referring to Flores IV ¶¶ 2-15.

⁵¹¹ Respondent’s Submission of April 26, 2018, at page 2. See also Hearing Transcript, Day 1, p. 84:8-9; p. 84:14-20.

⁵¹² Respondent’s Submission of April 26, 2018, at page 3. See also Hearing Transcript, Day 1, pp. 82:18-84:9; Day 6, p. 1632:22-24; p. 1635:1-3.

⁵¹³ Respondent’s Submission of April 26, 2018, at page 3, referring to Ex C-258, ICC Award ¶¶ 371-375. See also Hearing Transcript, Day 1, pp. 76:21-77:2.

⁵¹⁴ Hearing Transcript, Day 1, p. 89:1-16.

⁵¹⁵ Hearing Transcript, Day 1, p. 88:13-15; Day 6, pp. 1633:23-1634:8; p. 1635:4-9.

⁵¹⁶ Hearing Transcript, Day 1, p. 88:21-23; Day 6, p. 1635:17-21.

⁵¹⁷ Respondent’s Submission of April 26, 2018, at page 5.

⁵¹⁸ Respondent’s Submission of April 26, 2018, at page 5; *c.f.* Claimants’ Comments on Alternative Valuation Calculations at ¶¶ 2-6.

C. QUANTIFICATION

466. Besides disagreeing about the appropriate methodology for valuing the Claimants' investment, the Parties take different views on several aspects of the calculation of compensation, which have a major impact on quantification.

1. The Claimants' Position

467. The Claimants explain the calculation carried out by their experts as follows.

a. Reduced Spectrum Scenario

468. Applying the DCF method as described above (see Section VI.B.1), Mr. Sacks concludes that the fair market value of Devas on the valuation date is USD 1.5 billion.⁵¹⁹ As set out above, in application of the Market Approach, Mr. Bazelon concludes that Devas' BWA segment has a fair market value of approximately USD 1.7 billion in the Reduced Spectrum Scenario as of the valuation date.⁵²⁰

469. As both approaches produce close results, Mr. Sacks averages them to obtain a value of USD 1.54 billion for the BWA segment. To obtain the total value of Devas' business, Mr. Sacks adds USD 120 million corresponding to the AV segment's value, and the resulting total value is USD 1.66 billion for the combined AV/BWA business.⁵²¹ Moreover, as described above, the Claimants' experts also calculate Devas' value for the alternative scenario of an AV services-only business as amounting to USD 469 million.⁵²²

470. The Claimants' experts have accepted two criticisms regarding their damages quantification that had been put forward by the Respondent in its Counter-Memorial on Quantum, which leads to a downward adjustment to their damages calculation of 7% in their Reply on Quantum.⁵²³ This downward adjustment results from the following corrections: Mr. Bazelon accepts that he had mistakenly (i) modelled working capital equal to one month's EBITDA instead of revenues; and (ii) modelled bandwidth demand only based on IPTV data instead of also including the demand

⁵¹⁹ Claimants' Submission on Quantum ¶ 96; Sacks I ¶ 133.

⁵²⁰ Claimants' Submission on Quantum ¶ 102; Bazelon I ¶ 89.

⁵²¹ Claimants' Submission on Quantum ¶ 103.

⁵²² Claimants' Submission on Quantum ¶ 109.

⁵²³ Claimants' Reply on Quantum, footnote 5.

for BWA traffic.⁵²⁴ The corrections lead to a combined reduction of USD 181 million to his DCF value for Devas' BWA/AV business in the Reduced Spectrum Scenario.⁵²⁵

471. Pursuant to this downward adjustment, the total value of Devas' BWA/AV business claimed by the Claimants is USD 1.540 billion;⁵²⁶ and Devas' value for the alternative scenario of an AV services-only business is USD 434 million.⁵²⁷
472. In his third report, Mr. Sacks updates the amount of damages to which each of the Claimants is entitled for the combined AV/BWA services business under the Reduced Spectrum Scenario (according to their respective shareholdings in Devas) applying pre-award interest at the LIBOR rate + 4% as of November 30, 2017; and concludes that CC/Devas and Telcom Devas are entitled to USD 364 million each, and DEMPL is entitled to USD 74 million.⁵²⁸
473. He also updates the amount of compensation to which each Claimant would be entitled in the AV-only case under the Reduced Spectrum Scenario applying pre-award interest at the LIBOR rate + 4% as of November 30, 2017 and concludes that CC/Devas and Telcom Devas are entitled to USD 103 million each, and DEMPL is entitled to USD 21 million.⁵²⁹
474. The Claimants contest the findings of Mr. Flores. They consider that he attempts to maximise the discount rate by adding risks that have already been accounted for in the cash flows. The Claimants criticize that Mr. Flores affirms that "country risk" is absent (while the Claimants' expert model is built on Indian-specific data) and that he adds a "size premium" (or "alpha") (while this argument has been rejected in the literature and in recent investor-state cases).⁵³⁰ Furthermore, the Claimants argue that he seeks to "load"⁵³¹ cash flows with further, value-depressing inputs which are not appropriate.⁵³² According to the Claimants, Mr. Flores "should

⁵²⁴ Claimants' Reply on Quantum, footnote 5.

⁵²⁵ Claimants' Reply on Quantum, footnote 5; see also Bazelon II ¶ 171; Sacks II ¶ 4. However, Mr. Bazelon's market approach valuation remains unaltered.

⁵²⁶ Claimants' Reply on Quantum ¶ 35; Hearing Transcript, Day 1, p. 38:1-5; Day 6, p. 1542:14-16.

⁵²⁷ Claimants' Reply on Quantum ¶ 31; Sacks II, Table 3.

⁵²⁸ Sacks III ¶ 16 and Table 5.

⁵²⁹ Sacks III ¶ 17 and Table 6.

⁵³⁰ Claimants' Reply on Quantum ¶ 29.

⁵³¹ Claimants' Reply on Quantum ¶ 30.

⁵³² Claimants' Reply on Quantum ¶ 30.

have assumed that Devas would react like a rational economic actor and mitigate, if not completely offset, the negative value of the same.”⁵³³

475. In particular, the Claimants defend their choice of discount rate and maintain that “only after there are heavy reductions in Devas’s cash flows is the mature-company WACC used to discount to present value (...) it is in fact inappropriate to include diversifiable risks in *both* the discount rate and the cash flows, as Dr. Flores urges.”⁵³⁴ Thus, they request that “Dr. Flores’s plea to boost the discount rate to account for risks *already* factored into the cash flows should be rejected.”⁵³⁵ [emphasis in original]

476. The Claimants regard it as “inconceivable that a legitimate valuation of Devas would result in a *negative* value, particularly in light of this Tribunal’s findings that even as of 2008, Devas had considerable value based on DT’s USD 75 million investment and business resources for a 20%⁵³⁶ equity stake.”⁵³⁷ [emphasis in original] The Claimants note the view of their expert, Mr. Sacks, that, given the above-mentioned investment by DT, “the implied fair market value of Devas in March 2008 was *at least* USD 375 million.”⁵³⁸ [emphasis in original] According to the Claimants, the above-mentioned market value

is before taking into account the numerous synergies and in-kind contributions DT actually contributed as a strategic investor, such as its experience in building state of the art terrestrial communications networks capable of providing the most sophisticated BWA services, its technical expertise, and its ability to obtain competitive pricing and purchasing power for all of the necessary components of the ground network.”⁵³⁹ [emphasis in original]

477. Hence, the Claimants’ position is that DT’s investment in Devas on March 2008 constitutes a “real-world transaction” which determines that Devas’ fair market value at that time “[wa]s demonstrably greater than \$375 million when the investment in-kind of Deutsche Telekom is taken into account.”⁵⁴⁰ In particular, the Claimants dispute the Respondent’s argument (see

⁵³³ Claimants’ Reply on Quantum ¶ 152.

⁵³⁴ Claimants’ Reply on Quantum ¶¶ 160-161.

⁵³⁵ Claimants’ Reply on Quantum ¶ 164.

⁵³⁶ The actual percentage was 19.62% (Ex. R-207, Expert Report of Greg Harman, FTI Consulting, 4 May 2018 ¶ 1.13) but the Parties rounded it up at 20% in their submissions and the Tribunal is using this percentage in this Award.

⁵³⁷ Claimants’ Reply on Quantum ¶ 32.

⁵³⁸ Claimants’ Submission on Quantum ¶ 46; referring to Sacks I, Annex A ¶ 9. See also Claimants’ Reply on Quantum ¶ 44. See also Hearing Transcript, Day 6, pp. 1535:24-1536:6.

⁵³⁹ Claimants’ Reply on Quantum ¶ 44; referring to Larsen I ¶¶ 40, 42-45; Larsen II ¶¶ 5, 17; Claimants’ Submission on Quantum ¶¶ 44-46; Sacks II ¶¶ 95-89.

⁵⁴⁰ Hearing Transcript, Day 1, p. 26:5-7; Day 6, p. 1534:7-21.

section 2 below) that the preferential character of the shares acquired by DT Asia could be of significance in assessing the value of the transaction:⁵⁴¹

DT [Asia] did not obtain control of the board or the supervisory directors, and as a result, it did not have the contractual right to trigger a liquidation and did not have the right to a preference distribution at will.⁵⁴²

478. The Claimants underscore that the Respondent recognizes that “DT invested with full knowledge that a WPC license would need to be obtained”⁵⁴³ but ignores that this has “profound value implications.” According to the Claimants, “DT viewed Devas as an extremely valuable company *before* it had even applied for a WPC license.”⁵⁴⁴ [emphasis in original]
479. Moreover, the Claimants argue that between March 2008 and February 2011 Devas’ value grew over that period of time;⁵⁴⁵ pointing to several “increased value-drivers,” including: the obtainment of experimental licenses⁵⁴⁶ and the development of experimental trials which confirmed the viability of the Devas’ system;⁵⁴⁷ significant technological developments (like the development of the LTE system and the emergence of eMBMS technology);⁵⁴⁸ and the “explosive growth in demand for data services in India.”⁵⁴⁹ According to the Claimants, “the only negative event during this period was the action of Dr. Radhakrishnan in seeking to covertly recapture the 70 MHz of spectrum for India. As a matter of law, this negative event must be eliminated from consideration in the “but for” case.”⁵⁵⁰
480. Finally, the Claimants point out that Mr. Flores was also the testifying expert for Antrix before the ICC Tribunal, which determined that his “no damages position” was “plainly unfounded and unpersuasive.”⁵⁵¹ The ICC Tribunal noted that in September 2009 “sophisticated investors made a substantial further investment in”⁵⁵² Devas, which was “entirely inconsistent with” and

⁵⁴¹ Hearing Transcript, Day 6, pp. 1706:21-1707:8.

⁵⁴² Hearing Transcript, Day 6, p. 1707:4-8.

⁵⁴³ Claimants’ Reply on Quantum ¶ 45; referring to Flores I ¶ 195.

⁵⁴⁴ Claimants’ Reply on Quantum ¶ 45; Hearing Transcript, Day 6, pp. 1575:14-1576:4; p. 1579:11-18; p. 1580:10-25.

⁵⁴⁵ Claimants Submission on Quantum ¶¶ 32-65; Hearing Transcript, Day 1, p. 28:11-17.

⁵⁴⁶ Hearing Transcript, Day 6, pp. 1581:23-1584:20.

⁵⁴⁷ Claimants’ Reply on Quantum ¶ 46.

⁵⁴⁸ Claimants’ Reply on Quantum ¶¶ 47, 78-80.

⁵⁴⁹ Claimants’ Reply on Quantum ¶ 48.

⁵⁵⁰ Claimants’ Reply on Quantum ¶ 49.

⁵⁵¹ Claimants’ Reply on Quantum ¶ 54, quoting Ex. C-258, ICC Award ¶ 361.

⁵⁵² Claimants’ Reply on Quantum ¶ 54, quoting Ex. C-258, ICC Award ¶ 339(d).

“rendered unpersuasive” Mr. Flores’ zero-dollar valuation.⁵⁵³ Furthermore, the Claimants also note that Mr. Flores

exclusively testifies in favour of sovereign defendants, often in cases where, as in the ICC Arbitration, India’s current counsel is representing the sovereign in question. The close alignment in past representations, together with the close alignment in his and India’s assertions that there is “no value” or “no damages,” raises obvious questions about Dr. Flores’s independence and impartiality.⁵⁵⁴ [footnotes omitted]

b. Original Spectrum Scenario

481. Mr. Sacks concludes that Devas’ BWA segment value in the Original Spectrum Scenario on the basis of his DCF analysis is USD 1,053 million.⁵⁵⁵ He recalls that Mr. Bazelon’s valuation of the same segment under the Original Spectrum Scenario following the Market Approach amounts to USD 1,705 million.⁵⁵⁶ He gives equal weight to both valuations and reaches an average fair market value of Devas’ BWA segment as of the valuation date in the Original Spectrum Scenario of USD 1,379 million.⁵⁵⁷
482. Since there is no market comparable for the AV segment, he only calculates its fair market value on the basis of DCF valuation, which results in USD 468 million.⁵⁵⁸ Accordingly, the fair market value of the combined AV/BWA business on the valuation date in the Original Spectrum Scenario is USD 1,848 million.⁵⁵⁹
483. Therefore, the value of Devas under the Original Spectrum Scenario is 20% higher than its estimated value under the Reduced Spectrum Scenario, which amounted to USD 1.540 million.⁵⁶⁰ The Claimants consider that the “modest difference” is not surprising since Devas would be able to essentially provide the same services under both scenarios at nearly the same projects costs.⁵⁶¹ He notes that the higher valuation in the Original Spectrum Scenario results from higher AV revenues in rural areas, earlier AV revenues in urban areas and lower total terrestrial re-use fees,

⁵⁵³ Claimants’ Reply on Quantum ¶ 54, quoting Ex. C-258, ICC Award ¶ 339(d).

⁵⁵⁴ Claimants’ Reply on Quantum ¶ 56.

⁵⁵⁵ Sacks III ¶ 10; Sacks IV ¶ 6.

⁵⁵⁶ Sacks III ¶ 11, Sacks IV ¶ 6.

⁵⁵⁷ Sacks III ¶ 11; Sacks IV ¶ 6.

⁵⁵⁸ Sacks III ¶ 12; Sacks IV ¶ 7.

⁵⁵⁹ Sacks III ¶ 12; Sacks IV ¶ 7; Hearing Transcript, Day 1, p. 37:14-18; Day 6, p. 1540:10-15.

⁵⁶⁰ Bazelon III ¶ 42.

⁵⁶¹ Hearing Transcript, Day 1, p. 37:3-6; Bazelon III ¶ 42.

all of which increase Devas' value.⁵⁶² He also notes that Devas would have to incur the costs of the AV terrestrial network and lease fees for the second satellite in the Original Spectrum Scenario, which partially offset the abovementioned value-increasing factors.⁵⁶³

484. Mr. Sacks relies on Mr. Bazelon's cash flow projections for an AV-only business to perform a DCF valuation under the Original Spectrum Scenario and concludes that it would have a fair market value of USD 631 million, which is 45% higher than the value of USD 434 million under the Reduced Spectrum Scenario.⁵⁶⁴ In this case, "the cash flow projections exclude all BWA-related revenues and costs and reflect the optimized AV architecture that would have been possible if there was no need to coordinate it with an overlapping BWA network."⁵⁶⁵ This larger difference is explained because the Original Spectrum Scenario involves

the doubling of rural revenues (no longer subject to a 50% reduction in content caused by the reduced amount of spectrum) and an earlier start of the AV services and the partially offsetting increase in costs for the second satellite capacity reservation and lease fees.⁵⁶⁶

485. Mr. Sacks further notes that his understanding of the Tribunal's instructions is that

it has been suggested that compensation could be calculated using the Original Spectrum Case and multiplying it by 40% to reach a value of Devas (having allowed for those parts of the taking that were judged to be covered by "essential security" interests"). I present no opinion on the appropriateness of that approach, which I understand is a legal matter. If one applies that method, however, 40% of Devas's FMV as of February 17, 2011 is USD 739.1 million.⁵⁶⁷

486. He notes that the Claimants are partial shareholders in Devas, so it is still necessary to calculate compensation commensurate with their shareholding.⁵⁶⁸ He applies pre-award interest at the LIBOR rate + 4% as of April 26, 2018; and concludes that CC/Devas and Telcom Devas are entitled to USD 179 million each, and DEMPL is entitled to USD 37 million.⁵⁶⁹

⁵⁶² Bazelon III ¶ 43.

⁵⁶³ Bazelon III ¶ 43.

⁵⁶⁴ Bazelon III ¶ 44. See also Sacks IV ¶ 10.

⁵⁶⁵ Sacks III ¶ 15; Sacks IV ¶ 10.

⁵⁶⁶ Bazelon III ¶ 44.

⁵⁶⁷ Sacks III ¶ 13. See also Sacks IV ¶ 8. See also Hearing Transcript, Day 1, p. 37:19-20; Day 6, p. 1540:16-20.

⁵⁶⁸ See Hearing Transcript, Day 1, p. 37:21-25; Day 6, pp. 1540:21-1541:6.

⁵⁶⁹ Sacks IV ¶ 9, Table 3.

487. Within the AV-only business valuation under the Original Spectrum Scenario, Mr. Sacks concludes that 40% of its value is USD 252.4 million.⁵⁷⁰ He also calculates the amount of damages to which each Claimant would be entitled on the basis of their shareholding and including pre-award interest at the LIBOR rate + 4% as of April 26, 2018; and concludes that CC/Devas and Telcom Devas are entitled to USD 61 million each, and DEMPL is entitled to USD 12 million.⁵⁷¹

2. The Respondent's Position

488. The Respondent's position is that "no award of compensation can be justified in this case."⁵⁷² In addition to the criticisms to the Claimants' experts' valuation, which will be set out in the following paragraphs, the Respondent criticises the Claimants' reliance on the implicit USD 375 million dollar value of Devas on the basis of DT's USD 75 million investment on March 2008.⁵⁷³ The Respondent underscores that

DT [Asia] was not a common shareholder (...) Its risk was very limited. It had preferred dividend rights and preferred liquidation rights in case things went badly. It also knew that no major capital expenditures would be made unless and until the licencing risks could be overcome and the business case made. And, finally, they received those additional protections I talked about in the form of representations and warranties from Devas.⁵⁷⁴

489. In the Respondent's view, if a transaction were to be used to extrapolate the value of a business, it should be "a common share transaction, such as the purchase of shares in September of 2009 (...) which was at \$146 per share rather than the 2,645 per share for the DT transaction."⁵⁷⁵ If such a transaction is used to extrapolate the value of the business, the Respondent submits, the result is about USD 22 million, rather than USD 375 million.⁵⁷⁶
490. The Respondent explains the calculations carried out by its expert, Mr. Flores, as follows.

⁵⁷⁰ Sacks III ¶ 15; Sacks IV ¶ 10.

⁵⁷¹ Sacks IV ¶ 10, Table 4.

⁵⁷² Hearing Transcript, Day 1, p. 81:23-25.

⁵⁷³ Hearing Transcript, Day 6, p. 1693:15-25.

⁵⁷⁴ Hearing Transcript, Day 6, p. 1694:1-15.

⁵⁷⁵ Hearing Transcript, Day 6, pp. 1694:25-1695:5.

⁵⁷⁶ Hearing Transcript, Day 6, p. 1695:5-8.

a. **Reduced Spectrum Scenario**

491. The Respondent notes that the Claimants have not argued any specific compensation claim for the violation of the FET standard,⁵⁷⁷ and points out that *Chorzów Factory* “would only call for reparation for the actual damage that was a direct consequence of the breach, not the consequences of the legitimate act of the taking.”⁵⁷⁸ In this regard, the Respondent quotes a scholarly article, which points out:

[A] mere finding of a breach of due process at the time of the expropriation does not warrant mechanically awarding the full value of the asset as of the date of the Award. Rather, when applying the *Chorzów* rule, tribunals should analyse what the actual damage sustained by the injured party was as a direct consequence of the given procedural irregularity.⁵⁷⁹

492. The Respondent notes that the Claimants have neither claimed nor proved that any treaty violation occurred in this case which “would entitle them to compensation above and beyond the market value of the property taken.”⁵⁸⁰

493. More specifically, the Respondent contests the validity of the Claimants’ inputs to their cash flows calculation. It notably criticizes the following aspects: (i) the Claimants have assumed a roll-out of Devas’ services using terrestrial technologies which in 2011 and 2012 were in their infancies, largely untested and not in commercial use anywhere in the world;⁵⁸¹ (ii) they have assumed population figures (which drive the number of customers and therefore impact revenues) which would not have been available to a buyer on February 2011;⁵⁸² (iii) while the Darwin model only projected cash flows for 10 years, the Claimants have come up with projections of their own for an additional 14-year period by simply assuming a 4.5% annual growth on the basis of India’s GDP (data that is unrelated to the Darwin Model’s cash flows);⁵⁸³ (iv) they have assumed that working capital requirements should be equal to one month of revenues (and have further miscalculated working capital relying upon EBITDA, which is a measure of profit rather than

⁵⁷⁷ Respondent’s Rejoinder on Quantum, footnote 18; Hearing Transcript, Day 1, p. 78:19-24.

⁵⁷⁸ Respondent’s Rejoinder on Quantum ¶ 81.

⁵⁷⁹ Respondent’s Rejoinder on Quantum, footnote 221.

⁵⁸⁰ Respondent’s Rejoinder on Quantum ¶ 81.

⁵⁸¹ Respondent’s Counter-Memorial on Quantum ¶ 51; Flores I ¶¶ 298-314.

⁵⁸² Respondent’s Counter-Memorial on Quantum ¶ 51; Flores I ¶¶ 315-317.

⁵⁸³ Respondent’s Counter-Memorial on Quantum ¶ 51: the Respondent points out that the projections in the Darwin Model are based on population growth in urban areas, not on GDP. Accordingly, if the Claimants would assume that the terminal growth rate had been equal to the projected growth rate of population in urban areas (rather than projected GDP), Devas’ value would drop by USD 460.6 million, all else being equal. See also Flores I ¶¶ 318-323.

revenues);⁵⁸⁴ (v) they have updated the download speeds for BWA services assumed in the Darwin Model to meet the requirements for broadband services recommended by TRAI, but did not also assume that they would have to grow thereafter at a higher speed than that used in the Darwin Model in order to reach the speed recommended by TRAI;⁵⁸⁵ and (vi) they have assumed a 50:1 “oversubscription ratio,” which is too high since in 2009 the TRAI issued guidelines limiting the oversubscription ratio to 30:1.⁵⁸⁶

494. The Respondent contends that, if all these errors in inputs to the cash flows were corrected, this would have a significant negative impact on Devas’ value.⁵⁸⁷ However, the Respondent points out that “the effect of these errors pales in comparison to the effect of the selection by the Claimants’ experts of a grossly inadequate discount rate.”⁵⁸⁸ In the Respondent’s view, “there’s no need to argue about cash flows if any reasonable discount rate would get you to a negative net present value under [the Claimants’] own numbers.”⁵⁸⁹
495. The Respondent strongly criticizes the adoption of a discount rate of just over 10% “on par with the giants in the Indian telecommunications industry,” while Devas was “a start-up with no customers and no infrastructure.”⁵⁹⁰ The Respondent notes that such an assumption is unjustified because Devas’ business “was replete with risks and uncertainties that were far more extensive and with implications far more profound than those that applied to incumbent players.”⁵⁹¹
496. Likewise, the Respondent criticizes that the Claimants’ experts purport to deal with those risks by reducing the cash flows accounted for in their model, rather than adjusting the discount rate, notably by (i) assuming an annual spectrum charge equal to that charged by Slovenian authorities in Slovenia; (ii) adding a “pre-revenue adjustment”; (iii) assuming that after twenty-four years Devas’ business would cease because Indian authorities would not negotiate a lease extension;

⁵⁸⁴ Respondent’s Counter-Memorial on Quantum ¶ 51: the Respondent claims that if this assumption is corrected, Devas’ value would drop by USD 97.3 million, all else being equal. See also Flores I ¶¶ 324-327.

⁵⁸⁵ Respondent’s Counter-Memorial on Quantum ¶ 51; Flores I ¶¶ 330-338. See also Hearing Transcript, Day 6, pp. 1646:2-1647:25; p. 1685:7-11.

⁵⁸⁶ Respondent’s Counter-Memorial on Quantum ¶ 51; Flores I ¶¶ 346. See also Hearing Transcript, Day 6, pp. 1685:24-1688:9.

⁵⁸⁷ Respondent’s Counter-Memorial on Quantum ¶ 52.

⁵⁸⁸ Respondent’s Counter-Memorial on Quantum ¶ 52. See also Hearing Transcript, Day 1, pp. 94:24-95:12.

⁵⁸⁹ Hearing Transcript, Day 1, p. 118:13-16; Day 6, pp. 1644:16-23; pp. 1645:16-1646:1.

⁵⁹⁰ Respondent’s Counter-Memorial on Quantum ¶ 53. See also Hearing Transcript, Day 1, p. 120:5-12.

⁵⁹¹ Respondent’s Counter-Memorial on Quantum ¶ 54.

and (iv) assuming that India would require Devas to meet the build-out requirements for a terrestrial system equivalent to those that a Pan Indian operator would have to achieve.⁵⁹²

497. The Respondent contends that these adjustments to the projected cash flows (i) do not adequately account for the risks inherent in the Devas' business as a start-up company without customers or infrastructure which was wholly dependent on the satellites' launch; and (ii) are adjustments which would have been required in any case and do not offset the real risks faced by Devas.⁵⁹³ In particular, the Respondent argues that only the "pre-revenue adjustment" would be an attempt to deal with start-up risk, while the other three adjustments would have nothing to do with it and would merely be part of the process of computing the cash flows.⁵⁹⁴
498. Specifically, the Respondent argues that the inclusion of a charge for build-out obligations is a requirement that must be reflected in the projected cash flows in any event for the model to be correct, so it is not apparent why it should be considered a "a risk-reducing adjustment"⁵⁹⁵ to the cash flows.⁵⁹⁶ Likewise, the Respondent asserts that the assumption that the inclusion of an annual re-use fee found appropriate by a foreign regulator (*i.e.* Slovenia) is a risk-reducing adjustment is without merit. Such annual fee is far below the upfront auction price which Indian regulators would have charged, and no willing buyer would have treated the high probability of a spectrum charge, which would have rendered the business non-viable, as mitigated by the inclusion in the cash flows equivalent to a foreign fee.⁵⁹⁷
499. The Respondent also rejects the Claimants' qualification of the inclusion of "renegotiation risk" as a "conservative assumption," as there is no reason why a reasonable buyer would assume that the Government would permit Antrix to lease the satellites for a further period, so the exclusion of cash flows after year 24 is not a risk-reducing factor.⁵⁹⁸

⁵⁹² Respondent's Counter-Memorial on Quantum ¶ 55. See also Hearing Transcript, Day 6, p. 1657:5-13.

⁵⁹³ Respondent's Counter-Memorial on Quantum ¶ 55; Flores I ¶¶ 90-157. See also Hearing Transcript, Day 1, pp. 133:1-134:21.

⁵⁹⁴ Hearing Transcript, Day 6, pp. 1657:14-1660:2.

⁵⁹⁵ Respondent's Counter-Memorial on Quantum ¶ 56.

⁵⁹⁶ Respondent's Counter-Memorial on Quantum ¶ 56. See also Hearing Transcript, Day 1, pp. 133:17-134:4; Day 6, p. 1659:8-15.

⁵⁹⁷ Respondent's Counter-Memorial on Quantum ¶ 57. See also Hearing Transcript, Day 1, pp. 132:20-133:16; Day 6, pp. 1659:16-1660:7.

⁵⁹⁸ Respondent's Counter-Memorial on Quantum ¶¶ 58-59; Flores I ¶¶ 121-127. See also Hearing Transcript, Day 1, p. 134:5-21; Day 6, p. 1658:4-10.

500. The Respondent also criticizes the application of a 39% “pre-revenue” reduction to the cash flows in order to account for the increased risk related to the start-up nature of Devas.⁵⁹⁹ According to the Respondent, a 39% pre-revenue adjustment is inadequate because it “assumes that only 39 percent of start-ups fail and 61 percent succeed.” In the Respondent’s view, however, “39 percent grossly underestimates the start-up risk of failure.”⁶⁰⁰ The Respondent contends that the Claimants have attempted to “to downplay that risk, but studies have shown that a substantial majority of start-ups fail.”⁶⁰¹ Thus, in the Respondent’s view, such 39% pre-revenue adjustment “grossly understates the start-up risk of failure”⁶⁰² and its only purpose is “to manufacture a positive net present value despite the fact that any reasonable discount rate, taking out that 39 percent PRA, would yield a negative net present value.”⁶⁰³
501. The Respondent relies on the analysis of Mr. Flores to prove that the Claimants’ analysis is flawed. First, the study on which the Claimants’ experts rely warns that failure rates therein are understated as many mergers and acquisitions are actually “disguised failures.”⁶⁰⁴ Second, the application of a pre-revenue reduction does not circumscribe that risk and does not justify the use of a discount rate commensurate with established companies, which is precisely what the Claimants’ experts have done.⁶⁰⁵
502. In the Respondent’s view, the pre-revenue adjustment was not correctly implemented by the Claimants, since “39 percent PRA has the same economic effect as increasing Brattle’s discount rate from 10.3 percent to 13.4 percent. So that’s a 3.1 percent increase (...) nowhere near the rates and the range (...) that venture capitalists routinely apply to account for start-up risk.”⁶⁰⁶
503. In support of its position regarding the inadequacy of the Claimants’ discount rate, the Respondent refers to the range of discount rates (from 26 to 34%) which Millennial Media “considered appropriate for valuing their start-up” in a public filing.⁶⁰⁷ The Respondent underscores that Millennial Media is a multi-media start-up which has Columbia Capital, “the

⁵⁹⁹ Hearing Transcript, Day 1, p. 134:22-25.

⁶⁰⁰ Hearing Transcript, Day 6, p. 1660:11-18.

⁶⁰¹ Hearing Transcript, Day 1, pp. 122:15-123:9.

⁶⁰² Hearing Transcript, Day 1, p. 135:1-3.

⁶⁰³ Hearing Transcript, Day 1, p. 135:9-12.

⁶⁰⁴ Respondent’s Counter-Memorial on Quantum ¶ 60; Flores I ¶ 133.

⁶⁰⁵ Respondent’s Counter-Memorial on Quantum ¶ 60; Flores I ¶¶ 128-157.

⁶⁰⁶ Hearing Transcript, Day 6, p. 1661:4-15.

⁶⁰⁷ Hearing Transcript, Day 1, pp. 126:10-127:24; referring to Ex. **R-205**, *Millennial Media, Inc., Prospectus Filed Pursuant to U.S. Securities and Exchange Commission Rule 424(b)(4)*, 28 March 2012, at p. 14. See also Hearing Transcript, Day 6, p. 1664:1-10.

venture capital parent of one of these Claimants,” as its major shareholder, and Mr. Gupta (a witness in the first phase of this proceedings) as a board member.⁶⁰⁸ Likewise, the Respondent relies on Mr. Scheuermann’s witness statement in the DT Arbitration which, according to the Respondent, recognised that start-up risks had to be accounted for in the discount rate.⁶⁰⁹ Reference is also made by the Respondent to the inclusion of “company specific risk premium” on the discount rate by Mr. Kaczmarek in the ICC Arbitration.⁶¹⁰

504. In sum, the Respondent points out that the Claimants’ experts seek to justify the application of a discount rate commensurate with that applicable to a large, established and successful company by making so-called risk-reducing adjustments to the cash flows. However, the “risk” these adjustments address is practically certain (such as the imposition of a build-out requirement), and the adjustments do not address the actual risks faced by Devas (*e.g.*, non-renewal of the lease on the same terms after 12 years).⁶¹¹
505. The Respondent affirms that no willing buyer would have followed the unorthodox approach of treating a start-up company as if it were an established, major player.⁶¹² Rather, the Respondent argues that the March 2008 transaction whereby DT Asia acquired 20% of equity in Devas, on the implicit assumption of a discount rate of 31.5%, provides a useful indication of what would be a realistic discount rate.⁶¹³
506. Mr. Flores calculates that a willing buyer, taking into account the risks Devas faced at the date, would have applied a discount rate of 32.4%.⁶¹⁴ If such a discount rate is applied to the Claimants’ cash flows, without the pre-revenue adjustment but without making any other adjustments, Devas would have had a negative value of USD 2.5 billion.
507. Moreover, the Respondent underscores that even if a discount rate of 21.1% is applied, as was put forward by Devas’ expert (Mr. Kaczmarek) in the ICC Arbitration, a negative value of 1.5 billion would be reached.⁶¹⁵ In fact, the Respondent claims that without changing the Claimants’ model

⁶⁰⁸ Hearing Transcript, Day 1, p. 126:16-21.

⁶⁰⁹ Hearing Transcript, Day 1, p. 128:5-12. See also Hearing Transcript, Day 6, p. 1664:17-22.

⁶¹⁰ Hearing Transcript, Day 6, p. 1663:7-18.

⁶¹¹ Respondent’s Counter-Memorial on Quantum ¶ 61; Respondent’s Rejoinder on Quantum ¶ 111. See also Hearing Transcript, Day 1, p. 134:10-17; Day 6, p. 1658:12-23.

⁶¹² Respondent’s Counter-Memorial on Quantum ¶ 62; Hearing Transcript, Day 1, p. 120:15-18.

⁶¹³ Respondent’s Counter-Memorial on Quantum ¶ 62; Hearing Transcript, Day 1, pp. 120:22-121:9, p. 122:2-12.

⁶¹⁴ Respondent’s Counter-Memorial on Quantum ¶ 64; Flores I ¶ 170, Table 4.

⁶¹⁵ Hearing Transcript, Day 1, pp. 119:1-6, pp. 124:21-125:15.

underlying assumptions, Devas' business only obtains any positive valuation at a discount rate below 15.8%.⁶¹⁶

b. Original Spectrum Scenario

508. In his supplemental expert reports, Mr. Flores argues that "under a proper analysis of the Original Spectrum Case, the Devas business had no value as of the valuation date."⁶¹⁷

509. Mr. Flores asserts that all the corrections to the Claimants' experts' cash flow projections which he sets out in his second report "apply equally to the Reduced Spectrum Case and the Original Spectrum Case."⁶¹⁸ He contends:

The cumulative impact of these changes, even using Brattle's unreasonably low discount rate, yields a negative net present value ("NPV") for Devas. Therefore, a prospective buyer would not be interested in investing in the Devas business.⁶¹⁹

510. Mr. Flores claims that if terrestrial spectrum fees (whether for 25 or 20 Mhz) were assessed using an upfront fee commensurate with the 2010 BWA auction results, in accordance with the position of the Indian regulators, the Claimants' experts' valuation would become negative, even maintaining all their other assumptions.⁶²⁰

511. Moreover, Mr. Flores recalls that he had also already proposed a discount rate which accounts for start-up risk. He argues that "at any discount rate above 16.5%, the NPV of Devas in Brattle's Updated Model in the Original Spectrum Case becomes negative, without applying any of the corrections to the cash flows" which he had argued for.⁶²¹ He also points out that applying the discount rate considered appropriate by Devas' expert in the ICC Arbitration (21.1%, which is much lower than the implicit discount rate in the DT transaction) results in a negative NPV of over a billion dollars.⁶²²

512. Regarding the Claimants' experts' AV-only business valuation, Mr. Flores also claims that there are certain flaws in their projected cash flows in the Original Spectrum Scenario:

⁶¹⁶ Hearing Transcript, Day 1, p. 119:7-15; Day 6, p. 1649:20-21.

⁶¹⁷ Flores III ¶ 7; Flores IV ¶ 15.

⁶¹⁸ Flores III ¶ 18.

⁶¹⁹ Flores III ¶ 19.

⁶²⁰ Flores III ¶ 20. See also Flores IV ¶ 13.

⁶²¹ Flores III ¶ 22. See also Flores IV ¶¶ 5-10.

⁶²² Flores III ¶ 22. See also Flores IV ¶ 10.

(i) Brattle incorrectly assumes that Devas would not have been charged an AV terrestrial spectrum fee, and (ii) Brattle again incorrectly assumes that the first satellite was launched in July 2010, with AV services beginning in October 2010.⁶²³

513. He argues that the ISP license alone (which is the only one license accounted for by the Claimants' experts in their DCF calculations for an AV-only business) would not be sufficient to develop Devas' proposed AV-only business since such services "would have been subject to other licenses and fees that would have to be determined, as no license existed that would cover Devas' proposed services."⁶²⁴ He recalls that Mr. Jain, Deputy Director General in the Data Services Wing of the Department of Telecommunications and whose testimony has been submitted by the Respondent ("**Mr. Jain**"), asserted in this regard:

If such service license(s) would have been brought into existence (...) the fees and charges (...) would have included not only an annual license fee, but also a non-refundable entry fee in order to provide its services (...) plus an upfront spectrum charge commensurate with auction prices (...) plus annual spectrum charges equal to a percent of AGR (...) or an amount based upon a formula that, *inter alia*, takes into account the spectrum used, the services provided and the area covered.⁶²⁵

514. Furthermore, he criticizes that the Claimants' experts' AV-only business valuation in the Original Spectrum Scenario "is based on the obviously incorrect assumption that the satellites were launched in July 2010 and that the AV services began in October 2010."⁶²⁶ Mr. Flores contends that one cannot carry out an economic valuation as of February 2011 assuming the occurrence of events in 2010 which everyone knows did not occur.⁶²⁷ Therefore, even assuming the launch date of July 2011 (which is the date used by the Claimants' experts in the Reduced Spectrum Scenario), this would move the launch of AV services one year forward to October 2011 and result in a reduction of Devas' AV-only business' value of 11% in this scenario.⁶²⁸ He also points out that such a launch date would still be unrealistic as the launch did not actually occur until August 2015.⁶²⁹

515. As with respect to the scenario of a combined AV/BWA business, Mr. Flores also criticizes the use of a 10.3% discount rate in the scenario of an AV-only business. He considers that rate unreasonably low and inadequate for a start-up company. He notes that applying a discount rate

⁶²³ Flores III ¶ 29.

⁶²⁴ Flores III ¶ 30.

⁶²⁵ Flores III ¶ 30, quoting Jain II ¶ 10.

⁶²⁶ Flores III ¶ 31. See also Flores IV ¶ 4.

⁶²⁷ Flores III ¶ 31.

⁶²⁸ Flores III ¶ 31.

⁶²⁹ Flores III ¶ 31.

which includes start-up risk like the one implicit in the DT transaction (and excluding the 39% pre-revenue adjustment) results in a negative value of USD 108 million in this scenario, even accepting all other assumptions made by the Claimants as correct.⁶³⁰

516. In sum, Mr. Flores explains that the conclusions in his second report remain unchanged if the Original Spectrum Scenario applies: once appropriate corrections are made to the Claimants' DCF model, both Devas' combined AV/BWA business and its AV-only business have no value.⁶³¹ Accordingly, he concludes that, on the alternative valuation approach, "40% of the value in the Original Spectrum Case is still zero."⁶³²

D. THE TRIBUNAL'S ANALYSIS

1. Introduction of Tribunal's Analysis of Quantum

517. In its Award on Jurisdiction and Merits, the Tribunal determined that the interest held by Devas under the Devas Agreement was a valuable asset.⁶³³ The Tribunal's objective now is to determine the value of what was taken by India as of February 17, 2011 when the CCS made its decision to cause the annulment of the Devas Agreement.
518. The summaries of the Parties' positions in the immediately preceding section of this Award and the evidence of their expert witnesses make it abundantly clear that the differences between the Parties are vast. On the one hand, Claimants' experts, Mr. Benjamin Sacks and Mr. Coleman Bazelon, have opined that the full value of Devas,⁶³⁴ in the Original Spectrum case, was in the order of USD 1.848 billion and, in the Reduced Spectrum Case, in the order of USD 1.540 billion.⁶³⁵ Mr. Daniel Flores, on the other hand, opined that in either scenario, Devas had no value in February 2011 and was, arguably, worth as little as negative USD 2.5 billion.⁶³⁶
519. In order to determine to what extent the Tribunal should rely on either of these dramatically differing opinions, the Tribunal will examine the underlying analyses performed by those experts. Among other things, the Tribunal will consider the date of valuation and what valuation principles

⁶³⁰ Flores III ¶ 32.

⁶³¹ Flores III ¶ 33. See also Flores IV ¶ 15.

⁶³² Flores III ¶ 33.

⁶³³ Award on Jurisdiction and Merits ¶ 207.

⁶³⁴ Arrived at by averaging the DCF-Based Value for the BWA Segment and the Market Comparables Method for the BWA Segment and adding a value for the AV Segment Value based on a DCF VC Method only.

⁶³⁵ Presentation by Mr. Coleman Bazelon, at Hearing on Quantum, page 25.

⁶³⁶ Respondent's Counter-Memorial on Quantum ¶ 65.

to apply, whether the DCF approach to valuation can be utilized in this case, and whether a market approach to value is helpful. Based on its examination of these issues, the Tribunal will seek to determine a reasonable value for Devas as of the valuation date.

520. The valuation date and applicable valuation principles have already been addressed in section IV.C above.

2. The DCF or Cash Method for Valuation

521. The Respondent has vigorously disputed the reliability of the DCF method for determining the value of Devas as of February 17, 2011. It contends that this approach is “highly suspect in the circumstances of this case, which involves a start-up company with no track record in a highly regulated industry with significant risks and uncertainties.”⁶³⁷ This submission was further developed in Respondent’s Rejoinder on Quantum. There, India submitted:

In its Counter-memorial on Quantum, Respondent pointed to the extreme sensitivity of Claimants’ DCF model to even slight adjustments to its cash flow assumptions, highlighting the inappropriateness of using the DCF methodology in this case. Respondent also showed that the problem associated with this extreme sensitivity is exacerbated by the surrealistic nature of the inputs in Claimants’ model, which not require slight adjustments but bare (sic) no relationship to reality.⁶³⁸

522. Referring to the decision in the *Metalclad* case, the Respondent highlighted that tribunal’s conclusion: “[w]here the enterprise has not operated for a sufficiently long time to establish a performance record or where it has failed to make a profit, future profits cannot be used to determine going concern or fair market value (...) The Tribunal agrees with Mexico that a discounted flow analysis is inappropriate in the present case because the landfill was never operative and any award based on future would be wholly speculative.”⁶³⁹ The Respondent cites other authorities to similar effect.⁶⁴⁰
523. India has also referred to the decision in the earlier ICC Arbitration involving Devas and Antrix in which that tribunal, after reviewing the expert opinions before it on the potential value of Devas, determined that it would not be appropriate to rely on a DCF methodology to value a company such as Devas that did not have any earnings history.⁶⁴¹ The ICC Tribunal considered that

⁶³⁷ Respondent’s Counter-memorial on Quantum ¶ 50_{jjf}; Respondent’s Rejoinder on Quantum ¶¶ 84_{jjf}.

⁶³⁸ Respondent’s Rejoinder on Quantum ¶ 92.

⁶³⁹ **CL-23**, *Metalclad Corporation v. The United Mexican States*, ICSID Case No. ARB(AF)/97/1, Award, 30 August 2000, 5 ICSID REPORTS 212 (2000) ¶¶ 120-121.

⁶⁴⁰ Respondent’s Rejoinder on Quantum ¶ 88.

⁶⁴¹ Ex. C-258, ICC Award ¶ 368.

although there were exceptional cases where relying on the DCF approach would be acceptable, that case was not one of them. It further held that there were several matters that were not clear, such as the future prices Devas would be able to charge for its services; markets for multi-media broadcasting services could be highly innovative and even very profitable products and services could quickly become obsolete; there was evidence that Devas would face significant competition for the services that it proposed to provide. As a result, the ICC Tribunal found there was “nothing” that could give it “sufficient confidence about the cash flows that Devas would have earned but for Antrix’s wrongful repudiation of the Devas Agreement.”⁶⁴²

524. In addition, the Respondent refers also to a number of other tribunal awards which rejected the use of the DCF approach where, among other things, a claimant had not operated for a sufficiently long time to establish a performance record or where it had failed to make a profit.⁶⁴³

525. The Respondent contends that the Tribunal should also follow certain guidelines published by the World Bank which state, in part:

6. Without implying the exclusive validity of a single standard for the fairness by which compensation is to be determined and as an illustration of the reasonable determination by a State of the market value of the investment under Section 5 above, such determination will be deemed reasonable if conducted as follows:

(i) for a going concern with a proven record of profitability, on the basis of the discounted cash flow value;

(ii) for an enterprise which, not being a proven going concern, demonstrates lack of profitability, on the basis of the liquidation value;

(iii) for other assets, on the basis of (a) the replacement value or (b) the book value in case such value has been recently assessed or has been determined as of the date of the taking and can therefore be deemed to represent a reasonable replacement value

For the purpose of this provision:

- a “going concern” means an enterprise consisting of income-producing assets which has been in operation for a sufficient period of time to generate the data required for the calculation of future income and which could have been expected with reasonable certainty, if the taking had not occurred, to

⁶⁴² Ex. C-258, ICC Award ¶¶ 369, 371, 374.

⁶⁴³ Among others, *Southern Pacific Properties (Middle East) Limited v. Arab Republic of Egypt*, ICSID Case No. ARB/84/3, Award on the Merits, May 20, 1992 ¶ 188; *Waguih Elie George Siag and Clorinda Vecchi v. The Arab Republic of Egypt*, ICSID Case No. ARB/05/15, Award, June 1, 2009 ¶ 570. To this must be added the award in *Deutsche Telekom AG v. Republic of India*, PCA Case No. 2014-10, which, with the Tribunal’s permission, was produced by the Respondent after the closing of the hearings.

continue producing legitimate income over the course of its economic life in the general circumstances following the taking by the State;⁶⁴⁴

526. Most critically, throughout this case the Respondent has disputed the Claimants' assumption that Devas would have successfully obtained the requisite licenses from WPC and, additionally, the assumption that Devas would not have been required to pay spectrum fees commensurate with auction values in accordance with the Indian regulators' level playing field policy. If either or both of these assumptions were misplaced, India says that would have, without more, "eliminated any value of the proposed Devas business."⁶⁴⁵
527. These broad objections to the Claimants' reliance on the DCF method rest primarily on the Respondent's contention that in other cases where there was reason to question the reliability of projected cash flows, especially in the case of start-ups and other businesses without a proven track record, numerous tribunals have ruled out such a methodology.⁶⁴⁶
528. The Claimants' first answer to the Respondent's arguments is that the question of whether the DCF method is appropriate is not one that should be determined by legal precedent. Rather, they say, the "sole *legal* dictate" is that Devas should be valued according to its "fair market value" at the valuation date. Valuation, in that setting, is an economic question, *i.e.* what "price" would be paid by "a hypothetical willing and able buyer and a hypothetical willing and able seller, both acting at arm's-length and being reasonably well-informed."⁶⁴⁷
529. The Claimants dispute the Respondent's reliance on various legal authorities indicating that the DCF method is not appropriate for valuing start-up companies.⁶⁴⁸ They contend that there are numerous authoritative economics texts finding that a DCF analysis is a valid method of valuing a pre-operational or early-stage business that does not have a history of profits, especially when there are pre-existing business plans and cash flow projections that can be used as part of the DCF analysis.⁶⁴⁹ For example, they quote Professor Marboe who observed: "A number of investment tribunals applied an income valuation approach also without a track record. This is not only true

⁶⁴⁴ Ex. R-4 (Appendix BF-6): *Legal Framework for the Treatment of Foreign Investment: Volume II, Report to the Development Committee and Guidelines on the Treatment of Foreign Direct Investment* (World Bank Group 21 September 1992), p.42; Respondent's Opening Argument at the Hearing on Quantum, 16 July 2018, p. 2.

⁶⁴⁵ Respondent's Rejoinder on Quantum ¶ 101 and footnote 284.

⁶⁴⁶ Respondent's Counter-Memorial on Quantum, footnote 113 (citing **CL-23 Metalclad Corporation v. The United Mexican States**, ICSID Case No. ARB(AF)/97/1, Award, 30 August 2000, 5 ICSID REPORTS 212 (2000), ¶¶ 120-121); and Respondent's Rejoinder on Quantum ¶ 84.*jf.*

⁶⁴⁷ Claimants' Reply on Quantum ¶ 139 and see footnote 252.

⁶⁴⁸ Claimants' Reply on Quantum ¶¶ 146-148.

⁶⁴⁹ Claimants' Reply on Quantum ¶ 143.

for cases where the valuation could be based on solidly formulated long-term contracts but also in cases where the future profitability depended on economic circumstances, such as consumers' demand and expenditures." The Claimants contend that a number of arbitral decisions support the use of a DCF analysis where there is reliable business data to support the cash flow assumptions.

530. In particular, the Claimants point to the facts here that there was a "solidly-formulated long term contract" in the form of the Devas Agreement, there was explosive demand in India for the data services that Devas would provide and the Darwin model supplied a reliable source of data concerning the future business operations of Devas' business.⁶⁵⁰
531. The Claimants dismiss India's reliance on the "World Bank Guidelines" as "fraught with issues." They say there has never been any reliable sign that business people use these "guidelines" in the "real world." Moreover, while the guidelines purport to say that DCF is not an appropriate methodology for valuing pre-revenue companies, because they are not "going concerns," Devas *is* a going concern since it is operating and possesses income-generating assets (even though they may be "pre-revenue"). It was an on-going business with "income producing assets" as at the Valuation Date and had generated the necessary data for ascertaining future income.⁶⁵¹
532. The Claimants say that using a DCF methodology in this case is appropriate because it is based on cash flows contained in the 2009 Darwin model, up-dated to the valuation date by Mr. Bazelon and adjusted to account for Devas' reduced spectrum and major risks. Mr. Sacks has noted that the 2009 Darwin model represents a rare and unique source of evidence about Devas' value. "It was developed by Devas's management and DT, a seasoned operator, well before any dispute with India arose, and represents Devas's actual plans for the implementation of its business."⁶⁵² In his third report, Mr. Sacks says Devas would be subject to the same risks as a mature telecom company once it reached maturity and characterizes Devas as "a VC-backed startup between early- and late-stage" development.⁶⁵³
533. In Mr. Sacks' opinion, the Darwin model cash flow projections "are substantially more reliable than those of a typical DCF model for a pre-revenue company." He identified some nine different considerations that lead him to this conclusion. In summary, they are:

⁶⁵⁰ Claimants' Reply on Quantum ¶ 150.

⁶⁵¹ Claimants' Reply on Quantum ¶ 143.

⁶⁵² Claimants' Reply on Quantum ¶ 138.

⁶⁵³ Sacks III ¶ 9.

- (a) The Darwin model was developed in the ordinary course of business (well before a dispute arose between the parties);
- (b) The cash flow projections were initially developed at a time when DT was considering buying a stake in Devas, following which it invested an initial USD 75 million equity purchase based, in part, on those projections;
- (c) The Darwin model was developed jointly by engineers and finance professionals;
- (d) DT and Devas spent months building and stress-testing the earlier Series-C version of the model;
- (e) Key personnel involved in developing the model had experience deploying terrestrial networks and developing business plans for similar projects for DT;
- (f) Key personnel from DT (the prospective investor) optimized the capital and operating expenditure assumptions, and ensured it had a viable 'go-to-market' plan that included advertising and retail distribution;
- (g) DT reviewed and refined the Darwin model, including the specifics of the Indian market, the cost of building the terrestrial network, the cost of maintaining and operating it, and bandwidth forecasts;
- (h) After its buy-in, DT committed significant resources and expertise to develop the Devas business model which is reflected in the Darwin model; and
- (i) Mr. Kim Larsen, a DT employee, was directly involved in the up-dating of the Darwin model in the summer of 2009 and in his witness statement confirmed that he had, at that time, "closely scrutinized" the cost of building the terrestrial network, the cost of maintaining the terrestrial network, the cost of operating the terrestrial network, and revenue-related drivers like the penetration rate.

534. As part of their income approach to valuation, Mr. Sacks and Mr. Bazelon discounted the adjusted and projected cash flow figures derived from the Darwin model in order to take into account certain perceived risks. These downward adjustments to the cash flows, it was said, accounted for Devas' "diversifiable risks," specifically:

- (a) A reduction of USD 363 million per year for the terrestrial re-use fee;
- (b) A reduction of USD 2.4 billion for the Build-Out Requirement;
- (c) Elimination of all cash flows after a 24-year period when the Devas Agreement is assumed to be terminated; and
- (d) A 39% reduction in every year's cash flows to account for start-up risk (a pre-revenue adjustment).⁶⁵⁴

535. Based on these discounts for the so-called diversifiable risks, the Claimants' experts submitted that they were able to apply a discount rate to all of Devas' future cash flows based on a WACC

⁶⁵⁴ Sacks III ¶¶ 160, 167-171.

of comparable mature telecommunications companies in India as of February 17, 2011. Mr. Sacks opined that this rate was 10.3% (or 14.3% in nominal terms).⁶⁵⁵

536. It is unnecessary for the Tribunal to refer to the full panoply of arguments advanced by Mr. Flores. These have been fairly summarized above in the presentation of his objections on this matter. In essence, what he objected to, as described by him various ways, was the application of what he said were inappropriate discount rates to unproven and speculative cash flows projected for Devas. On the other hand, as already noted, Mr. Sacks defended the use of these projected cash flows.
537. First of all, the Tribunal has come to the conclusion that it is appropriate in this case to use a DCF analysis to establish the value of the value of Devas. In addition to the cases mentioned by the Claimants and noted above, the Tribunal has noted another recent case which supports the conclusion that using a DCF analysis can be appropriate in the present case. The *Tethyan Copper* case concerned a mine development project without any track record of operations and with development permits still to be obtained. Nonetheless, the Tribunal concluded that “a DCF method can be reliably used in the instant case because of the commodity nature of the product and detailed mining cash flow analysis previously performed.” Of course, the intended product in this case was not a commodity in the usual sense of the term; it was a service, but a service with some commodity features (a much-in-demand service, rather standard in nature from the point of view of users). Moreover, just as in the mining sector, there exists a tested methodology common to all telecom service sellers applied to value their business. The Tribunal is satisfied that such methodology has been applied in this case.
538. The Tribunal has carefully reviewed the greatly differing opinions of the Parties’ experts. It should be observed that establishing a value for Devas necessarily involves certain hypothetical assumptions concerning what might have happened “but for” the intervention of India in February 2011.
539. The Tribunal considers, however, that there are a number factors showing that the DCF method is more dependable in this case than it may have been in many of the legal authorities cited by the Respondent. Among these are the following:
- (a) The DT transaction in March 2008 was an arms-length transaction entered into after extensive due-diligence by the parties. The imputed value for Devas, based on DT Asia’s USD 75 million investment was USD 375 million. While that figure represented a significant discount from what the assumed cash flows at the time implied was the

⁶⁵⁵ Sacks III ¶¶ 160, 167-171.

value of Devas,⁶⁵⁶ it was undoubtedly a good indication of the minimal value of Devas as of that date. Importantly, it showed that DT, a sophisticated, knowledgeable international enterprise was willing to throw in its lot with and take a minority position in Devas;

- (b) The Claimants fairly demonstrated that Devas did not lose value after March 2008. On the contrary, it is clear that upon DT Asia acquiring a significant stake in Devas, the synergies of that development added considerable value to it. DT's expertise, access to technological cutting edge developments and its resources for planning and overseeing the implementation of Devas' business plan added a strong element of viability to its prospects;
- (c) With the granting of the experimental license in 2009 and the granting of the IPTV license, Devas' prospects were improved even further. It is understood, of course, that these licenses were merely stepping stones toward the ultimate licensing that Devas would need from WPC after the satellites were launched. But, it is fair to observe that they were a good indicator that Indian authorities were not opposed to Devas' project;
- (d) Even though WPC would need to address a form of licensing for terrestrial re-use which until then had not been formally undertaken in India and even though India's level playing field policy no doubt applied to overall use of public resources, the Tribunal agrees with Mr. Bazelon that it is probable that internationally accepted practices would have guided Indian regulators in dealing with the hybrid circumstances that applied to the BWA derived from Devas' satellite sourced spectrum;
- (e) Critically, Devas had a unique capacity on the expected satellites, namely its "box out" position that meant, practically speaking, that its lease with Antrix created an extraordinary opportunity;
- (f) The Tribunal likewise agrees with Mr. Bazelon's opinion that India's regulators would not have deliberately simply neutralized such a valuable and important source of spectrum because of prior policy making in telecommunications;
- (g) Devas had, by early 2011, become something more than merely a start-up company with no prior history. It had been in existence since early 2005 and had worked diligently with DT to develop its cash flow analysis and to plan for the eventual launch of the satellites that would carry its S-band broadcast capacity across India. The projected cash flows had been subjected to expert scrutiny. Notably, Devas' business plan was developed quite independently and well ahead of the claim that is now before the Tribunal;
- (h) During the quantum phase of this case, further information from the records of DT came to light which included that company's due diligence in relation to its 2008 investment. Among other things, these materials showed that DT was aware of some of the risks on which India relies in this case to show that Devas' prospects had to be significantly discounted. The Tribunal concludes, however, that those materials also demonstrate that despite DT's awareness of those risks, it proceeded with its investment in Devas; and
- (i) DT itself when making its investment in Devas, utilized the DCF method in arriving at values that could be used in its investment decision making. It seems highly likely to

⁶⁵⁶ See Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶ 36: "I calculated the Enterprise Value of Devas in February 2008 to be US\$1.78 billion which was presented to the Management Board." [internal footnotes omitted]

the Tribunal that a prospective, hypothetical arms-length purchaser of Devas in February 2011 would have employed a DCF method in determining what value to ascribe to this business.

540. The Tribunal is persuaded that Devas and its significant shareholder, DT Asia, were justified in expecting Devas was “likely to yield economic benefits.”⁶⁵⁷ Not only was the Darwin Model a reliable source of data, developed in the ordinary course of business, the Tribunal further finds there was a “solidly-formulated long-term contract” in the Devas Agreement, all in the context of explosive demand in India for the data services Devas was expecting to provide.⁶⁵⁸
541. As Mr. Sacks has noted, the 2009 Darwin model represents a rare and unique source of evidence about Devas’ value. “It was developed by Devas’s management and DT, a seasoned operator, well before any dispute with India arose, and represents Devas’s actual plans for the implementation of its business.”⁶⁵⁹ Accordingly, in the opinion of the Tribunal, based on projected cash flows contained in the 2009 Darwin model, up-dated to the valuation date by Mr. Bazelon and adjusted to account for Devas’ major risks, the underlying data derived from the Darwin Model provides a dependable business case of what a reasonable, arms-length investor may have considered in a hypothetical purchase of Devas in February 2011.
542. Beyond that preliminary determination, however, the Tribunal recognizes that the Respondent’s expert, Mr. Flores, criticizes practically all aspects of Mr. Sacks’ DCF methodology, consistently expressing his view that, as earlier noted, Devas had either no value or even negative value as at the Valuation Date.
543. As a next step in its analysis, therefore, the Tribunal considers it appropriate to examine the differing views of the experts on applying the DCF method in this case. The Tribunal’s objective is to determine, as well as possible, what weight to give to these differing views and, in particular, which approach might be relied upon in drawing conclusions as to the quantum of the damages to be awarded in this case. In doing this, the Tribunal does not feel obliged to review in complete detail the full debate between the experts for the parties concerning their differing opinions.
544. The Tribunal recognizes, however, that there are a number of basic questions arising from those differing opinions. In its discussion, the Tribunal proposes to examine these questions:

⁶⁵⁷ Claimants’ Reply on Quantum ¶ 149.

⁶⁵⁸ Claimants’ Reply on Quantum ¶ 150.

⁶⁵⁹ Claimants’ Reply on Quantum ¶ 138.

- (a) What would be an appropriate discount rate to apply to the projected cash flows of Devas?
- (b) Should the cash flows relied upon by Claimants' experts be subject to additional discounting for start-up risk or country risk?
- (c) Is 61% a reasonable probability of success for Devas as of the Valuation date?
- (d) Is a 4.5% growth rate a reasonable factor to apply to the second 12 year term for the Devas Agreement?
- (e) Is there an appropriate "reasonableness test" by which to test the results produced by the DCF method of valuation?

545. The Tribunal's objective is not necessarily to answer each of these questions definitively, as a professional evaluator might. Rather, the Tribunal seeks to identify the strengths and weaknesses of the experts' opinions and, where appropriate, to draw conclusions on the extent to which it may adopt any of those opinions. In doing this, the Tribunal intends to highlight some of the important differences between the experts and to observe, in particular, their methodological disagreements.

546. After satisfactorily identifying a dependable cash flow, valuers using the DCF method must determine the discount rate which, when applied to those cash flows, may best approximate their present value. These are the fundamental building blocks of the DCF evaluation method. We turn first to the discount rate advanced by Mr. Flores, the Respondent's expert. He calculates that the discount rate implicit in the DT transaction in March 2008 was 31.5%.⁶⁶⁰ He derives that figure from the fact that DT Asia invested USD 75 million, representing 20% of the equity of Devas at the time. DT's initial investment was based on the cash flow projections developed in the Series C Model.⁶⁶¹

547. Mr. Flores uses the information in the DT transaction to derive a discount rate for Devas in February 2011. To do this, he initially calculates what he calls "an appropriate discount rate for an established Indian telecommunications company as of March 2008, ultimately arriving at 15.3%"⁶⁶² Next, he subtracts the discount rate for an established Indian telecommunications company, 15.3%, from the discount rate implicit in the DT transaction, 31.5%, resulting in a rate of 16.2% that he says reflects the "start-up" risk implicit in the DT transaction. As he explains, "[t]his 16.2% represents the risks specific to Devas assessed in the DT transaction, including the

⁶⁶⁰ Flores I ¶ 164.

⁶⁶¹ Ex C-45, Series C Share Subscription Agreement between Devas and DT Asia, 19 March 2008.

⁶⁶² Flores I ¶ 170.

additional regulatory risk faced by Devas compared to the telecommunications industry in general and the probability of Devas' failure."⁶⁶³

548. Mr. Flores then calculates what he says is the appropriate discount rate for an established Indian telecommunications company as of February 2011, 16.2%. Finally, he adds his estimated start-up risk of February 2011, 16.2%, to the discount rate for an established Indian telecommunications company as of February 2011, 16.2%. This yields "a discount rate for Devas as of February 2011 of 32.4%."⁶⁶⁴ Mr. Flores applies this rate and certain other discounts to the projected cash flows, leading ultimately to his conclusion that Devas had no value as of February 2011.

549. Mr. Flores supports his analysis by referring to the various risks that he said would have impacted Devas' value in February 2011. He disagrees with Brattle that Devas was by then a late stage start-up company that had already attained significant milestones. In his view, there were a number of reasons to assume that the start-up risk was even higher than the discount rate implicit in the DT transaction in March 2008.⁶⁶⁵ In February 2011, there was as yet no satellite launched and no operating licence from the WPC. There were, in addition, unresolved cost and regulatory issues regarding the use of terrestrial spectrum. Operational and other risks included potential reliance on a DVB-SH network that had not yet been tested commercially, a longer payback period than DT anticipated in March 2008, possible spectrum reassignments and demand uncertainty. Finally, there was the further fact that Devas had made only minimal capital investments up until then.⁶⁶⁶

550. Mr. Sacks rejects this entire approach, characterizing Mr. Flores' method as "flawed," adding that the result was "incorrect and unreasonable." Mr. Sacks says "the main shortcomings are:

- (a) Dr. Flores again includes diversifiable risks in the discount rate;
- (b) Dr. Flores undervalues Devas in 2008 by ignoring the effect of DT's in-kind contributions and synergies; and
- (c) The resulting 31.5% discount rate is rejected by the sources Dr. Flores claims support it."⁶⁶⁷

⁶⁶³ Flores I ¶ 170.

⁶⁶⁴ Flores I ¶ 170, together with ¶ 171 and Table 4.

⁶⁶⁵ Flores I ¶ 192.

⁶⁶⁶ Flores I ¶¶ 192-225.

⁶⁶⁷ Sacks II ¶ 82.

551. Mr. Sacks expanded on these summary points, pointing out that Mr. Flores' analysis of the DT transaction appears to assume that DT received no value or compensation for the synergies it created and that, "all of the value brought to the enterprise by DT was captured by Devas' existing owners."⁶⁶⁸ Mr. Sacks says Mr. Flores assumes that the value of DT Asia's equity in March 2008 was equal to the cash it invested and nothing more. Instead, he says that the fair market value of Devas in March 2008 was substantially more than the implied value of USD 375 million following DT's investment.⁶⁶⁹ When the synergies and in-kind contributions are considered, he says that after DT's investment, the value of Devas was "far above \$375 million."⁶⁷⁰
552. Mr. Sacks additionally says Mr. Flores' 31.5% or 32.4% discount rates are contradicted by the very authority he purports to rely on, namely Professor Damodaran.⁶⁷¹ Contrary to what Mr. Flores claims, Mr. Sacks says he in fact relied on the wrong figures from Professor Damodaran's paper. Mr. Flores cites figures to show what he considered to be realistic discount rates, but Mr. Sacks points out that those figures were taken from a table illustrating what Professor Damodaran called "The Dark Side of Valuation," (*i.e.* erroneous discount rates used by analysts by mistake because they included "survival risks"),⁶⁷² compared to what he called, "The Light Side of Valuation."⁶⁷³ In this regard, Mr. Sacks observes that evaluators sometimes erroneously include "survival risks" in their discount rates instead of treating them separately, as Mr. Sacks says he has done.⁶⁷⁴
553. The Tribunal has determined that it will not accept Mr. Flores' methodology for determining the discount rate to be applied to Devas' projected cash flows. The 31.5% rate implicit in the DT transaction appears to be largely affected by circumstantial considerations which do not, in the opinion of the Tribunal, fairly reflect the fullness of the DT transaction. In particular, the Tribunal agrees with Mr. Sacks that Mr. Flores appears to overlook the synergies and in-kind contributions along with other non-financial contributions created by DT's investment in Devas in 2008. These include such things as employee expertise and experience, purchasing and procurement power,

⁶⁶⁸ Sacks II ¶ 85.

⁶⁶⁹ Sacks I, Appendix A.

⁶⁷⁰ Sacks II ¶ 87.

⁶⁷¹ Ex. R-4. (Appendix BF-74), Aswath Damodaran, "Valuing Young, Start-up and Growth Companies: Estimation Issues and Valuation Challenges," *Stern School of Business, New York University*, May 2009.

⁶⁷² Sacks II ¶ 92 and footnotes 83-84.

⁶⁷³ Sacks II ¶ 94-95.

⁶⁷⁴ Sacks II ¶ 93.

on-going state-of-the-art research and technical expertise. All of these contributions by DT undoubtedly added substantial value to Devas and credibility to its prospects.

554. Moreover, it is evident that in 2008, DT had significant bargaining power in relation to Devas. Relatively speaking, Devas was at that point a small enterprise compared to DT, a world-wide telecommunications giant. Devas stood to gain enormously from DT's involvement, an advantage that DT undoubtedly relied on when coming to agreement with Devas. Given this uneven bargaining power, the Tribunal is not persuaded that it should rely on an implied discount rate derived from this transaction without further refinement and adjustments. Mr. Flores' opinion that the implied discount rate in the DT transaction reflected a very large start-up risk factor equal to over half of the implied rate seems unlikely to the Tribunal.
555. Finally, it appears that Mr. Flores did not further evaluate the data he derived from the projected cash flows developed in the Series C Model to reflect the probability of Devas' success or failure. The Tribunal notes that the 31.5% implicit rate computed by Mr. Flores, being derived from unadjusted cash-flows, cannot be applied to the probability-adjusted cash-flows relied on by the Claimants' experts. In any case, Mr. Sacks persuasively shows that neglecting probabilities in the cash-flows leads to inflated discount rates, thereby skewing the results. Mr. Flores simply attributed the difference in discount rates between the implicit rate for the DT transaction and that of an established Indian telecommunications company to start-up risk. The Tribunal is not persuaded that this methodology reliably sets an appropriate discount rate.
556. This determination still leaves open the question whether the 10.3% discount rate chosen by Claimants' expert is an appropriate one.⁶⁷⁵ In order to make a determination on that issue, the Tribunal considers it necessary to review further the underlying methodology employed by the Brattle Group.
557. Mr. Sacks extensively explains the basic methodology by which he and his colleague, Mr. Bazelon, derive cash-flows and a discount rate for purposes of their DCF analysis. This methodology is at the heart of significant disagreements between the Parties' experts. Mr. Sacks and Mr. Bazelon implemented their methodology as follows:

- (a) The Brattle experts begin their evaluation exercise by accepting the validity of the cash flow projections produced through the collaboration between Devas personnel and the DT team.⁶⁷⁶ The Darwin Model, described elsewhere, was the product of extensive collaboration between Devas and DT, updated to 2009. Mr. Bazelon adjusts the ten

⁶⁷⁵ Sacks I ¶¶ 114-115. Mr. Sacks states that the nominal WACC is 14.32% and the real WACC is 10.29%, which he rounded to 10.3%.

⁶⁷⁶ Bazelon I ¶ 15; Larsen I ¶¶ 22-27, 57; Claimants' Submission on Quantum ¶¶ 69-71.

years' of cash flow projections found in the Darwin Model, to reflect "projected free cash flows for the ten-year period following the Valuation Date."⁶⁷⁷ This included updating the Darwin Model to February 2011 to reflect additional capital expenses;

- (b) Mr. Sacks and his colleague then adjust the projected cash flows in the Darwin Model in order to take account of various risks. Mr. Sacks accepts that Devas faced several cash flow risks that were not expressly accounted for in the Darwin Model cash flow projections. These included the risk of a costly Build-Out Requirement being imposed on Devas as a condition of it obtaining a terrestrial re-use license, the risk of India imposing a Terrestrial Re-Use Fee that would have been higher than in keeping with international norms and stated Indian policy, risks inherent in a pre-revenue company such as Devas potentially failing for business, technical, regulatory or other reasons before the anticipated cash flows materialized and, finally, the risk that the Indian government would not have renewed the Devas Agreement on commercially viable terms upon expiry of its two twelve-year terms, contrary to "international norms" ("**Renegotiation Risk**");⁶⁷⁸
- (c) Mr. Sacks says he accounts for these various risks by adjusting the projected cash flows as opposed to attempting to reflect them in the discount rate ultimately applied to the cash flows. Here he draws a distinction between diversifiable risks and non-diversifiable risks. The former are risks that are specific to the company or enterprise being evaluated whereas systemic risks or non-diversifiable risks are risks affecting investments across a broad sector covering different markets, types of investment and companies. In Mr. Sacks' opinion, it is critical for evaluators to make adjustments for diversifiable risks to cash flow projections rather than endeavoring to reflect them in the discount rate.⁶⁷⁹ To do otherwise, as proposed by Mr. Flores, for example, would be contrary to best practices. As Mr. Sacks states, "[i]ncluding diversifiable risks in a discount rate is not just a violation of economic principles; it renders that discount rate useless for valuation;"⁶⁸⁰
- (d) Mr. Sacks' risk adjustments include utilizing the Terrestrial Re-Use Fee of some USD 361.7 million calculated by Mr. Bazelon to reflect his view that such a licence would have been granted, but at the high end of fees assessed in international practice. Specifically, on counsel's instruction, Mr. Bazelon assumes India would have imposed the highest observable fee internationally for terrestrial re-use and, further, that India would also have imposed a Build-Out Requirement obliging Devas to develop AV services in areas that would not otherwise be commercially attractive;⁶⁸¹
- (e) In terms of the Renegotiation Risk, Mr. Sacks says he models this risk in "the most conservative manner possible. I assume India would demand a fee so large that either Devas would decide not to operate, or would earn almost no profit after paying the fee. That is, I assume *no cash flows at all* after the expiration of the twenty-four year period;"⁶⁸²

⁶⁷⁷ Bazelon I ¶ 113.

⁶⁷⁸ Sacks I ¶ 31.

⁶⁷⁹ Sacks II ¶¶ 45-82.

⁶⁸⁰ Sacks II ¶ 51.

⁶⁸¹ Bazelon I ¶ 149.

⁶⁸² Bazelon I ¶ 63.

- (f) With respect to the survival/failure risk, Mr. Sacks applies a Pre-Revenue Adjustment, or PRA. The cash flow projections derived from the Darwin Model, as briefly described, above, are adjusted to account for the chance of Devas' possible failure.⁶⁸³ In order to justify his taking account of probabilities, Mr. Sacks refers to the Venture Capital (VC) industry in which it is common practice to factor in the probability of failure. In this regard, Mr. Sacks says:

Devas was a venture capital-backed firm and such risks are common in the venture capital world. To evaluate their investment opportunities, which are necessarily immature, investment-stage firms, venture capital ('VC') funds have developed a standardized two-step approach for adjusting their valuations of investment-stage firms to account for the risks posed by such firms;

Mr. Sacks says that in order to account for the start-up nature of the business, "investors calculate the Expected Exit value by multiplying the Exit Value by the probability of a successful exit."⁶⁸⁴

- (g) Having variously adjusted the cash-flows for what are, to him, specific risks, Mr. Sacks applies to the projected (adjusted) cash flows a discount rate that takes account of non-diversifiable risk.
- (h) In determining the potential risk of failure for Devas, Mr. Sacks cites an in depth study of over 600 Venture Capital firms, including "the frequency with which their investments succeeded or failed."⁶⁸⁵ That study also considered data provided in relation to a Dow Jones database that tracks the performance of VC funds and their investments.⁶⁸⁶ In Mr. Sacks' opinion, by February 2011, "Devas was somewhere between a late 'early stage' company and an early 'late stage' company. While it still had no revenues, it had already advanced through a number of important technical and financial milestones that place[d] it further along than a typical early-stage firm."⁶⁸⁷ Having regard for Devas achieving these milestones, Mr. Sacks estimated Devas' "probability of failure" was 39%.⁶⁸⁸ Although the study on which Mr. Sacks relies, led by Professor Gompers, was based on US data, Mr. Sacks further verified his estimated probability of success or failure for Devas by reference to Indian data;⁶⁸⁹

⁶⁸³ Sacks I ¶ 43.

⁶⁸⁴ Sacks IV ¶ 29. An examination of the Excel file provided by the Claimants (**BR-286**) shows that Mr. Sacks did not compute the Exit value in 2013 as such, although he stated during the Hearing on Quantum that he did so implicitly (see Hearing Transcript, Day 5, p. 1311:14-15 and 1311:19-20).

⁶⁸⁵ Ex. **BR-6**: Paul Gompers, William Gornall, Steven N. Kaplan, and Ilya A. Strebulaev, "How do Venture Capitalists Make Decisions?," *National Bureau of Economic Research Working Paper*, 2016 (Gompers et al. 2016).

⁶⁸⁶ Ex. **BR-6**: Paul Gompers, William Gornall, Steven N. Kaplan, and Ilya A. Strebulaev, "How do Venture Capitalists Make Decisions?," *National Bureau of Economic Research Working Paper*, 2016 (Gompers et al. 2016), Table 23.

⁶⁸⁷ Sacks I ¶ 51.

⁶⁸⁸ Sacks I ¶¶ 52-55.

⁶⁸⁹ Sacks I ¶¶ 56, *f*.

- (i) Based on his assessment of Devas' risk of failure, Mr. Sacks makes a Pre-Revenue Adjustment of 39%.⁶⁹⁰ In other words, he reduces the projected cash flows by this percentage.

558. Another area where significant differences of opinion emerged concerns Mr. Sacks' assumption of a terminal growth rate of 4.5% for the cash flows following year ten. He assumes that free cash flows would grow at a constant annual rate, an assumption, he observes, that "is commonly made when using the DCF valuation technique. It implies that after the end of the explicit projection period, the company would neither gain nor lose market share and that the industry size would not decline relative to the overall economy."⁶⁹¹
559. Mr. Sacks estimates the growth rate based on long-term expectations of real GDP growth for India. "As of 2011, the IMF was projecting that the Indian real GDP would grow at an average of 8.1% per year through 2016."⁶⁹² He contends that at the same time, a mature economy like that of the United States was expected to grow at approximately 2.5% real growth rate. While acknowledging that this projected rate of growth for India was unlikely to be maintained, he concludes that the Indian economy would have continued to outpace advanced economies while undergoing a gradual convergence between its emerging economy and those of more mature ones. "To reflect this long-run convergence, I assume an expected real GDP growth rate of 4.5%, which is about one percent less than the mid-point of the medium-term Indian GDP expected growth rate and the stable U.S. growth rate."⁶⁹³
560. Mr. Flores disagreed with Mr. Sacks' analysis, claiming his use of an average of the projected GDP growth rates through 2016 for India and the U.S. was "completely arbitrary."⁶⁹⁴ Mr. Flores' opinion is that the rate of population growth for India would be a better guide on the basis that the "projected cash flows are driven by the projected growth in population," not GDP.⁶⁹⁵ Mr. Sacks rejects this criticism, remarking that all available data suggested Indian GDP would grow faster than its population and so would firms in that economy.⁶⁹⁶ Moreover, Mr. Sacks says future cash flows for Devas would be more influenced by such things as "the Terrestrial Re-Use fee (large and steady outflow), the growth in Devas's penetration rate (a slow increase), and the

⁶⁹⁰ Sacks I ¶¶ 29-30.

⁶⁹¹ Sacks I ¶ 40.

⁶⁹² Sacks I ¶ 41.

⁶⁹³ Sacks I ¶ 41.

⁶⁹⁴ Flores I ¶ 320.

⁶⁹⁵ Flores I ¶ 323.

⁶⁹⁶ Sacks II ¶ 225.

timing of capital expenditure (large initial outflow and then periodic outflows), and the timing of capital expenditure (large initial outflow and then periodic outflows).”⁶⁹⁷

561. Additionally, Mr. Flores says that extending the Darwin model from 2020 to 2023 shows a 0.5% growth rate, thereby demonstrating that the 4.5% rate estimated by Mr. Sacks was a “fudge factor” and not reliable.⁶⁹⁸ Mr. Sacks likewise rejects this criticism, pointing out that the original Darwin Model considers a range of terminal growth rates ranging from 4.5% to 8.5%.⁶⁹⁹
562. The experts continued their disagreement in their next round of reports. In his third report, Mr. Flores proposes a “correction” to the cash flow projections postulated by Mr. Bazelon and Mr. Sacks to reflect a growth rate lower than Mr. Sacks’ figure based on an Indian GDP growth rate of 4.5%.⁷⁰⁰ In his answer to this proposed “correction,” Mr. Sacks says, among other things, “I assume that Devas would grow at the same rate as Indian GDP from years 11 to 24—meaning Devas would neither gain nor lose market share and the industry size would neither grow nor decline as a share of the economy.”⁷⁰¹ Mr. Sacks reiterates that he only uses the terminal growth rate for years 11 to 24 and thereafter makes what he calls “the highly conservative assumption that Devas would have no value whatsoever (even though firms can, and do, have perpetuity value).”⁷⁰²
563. In order to determine the proper discount rate, Mr. Sacks refers to the CAPM. This model identifies a base rate (the so-called “risk-free rate”), to which must be added a risk premium; the risk premium itself is a function of the systematic risk of the company (its undiversifiable risk), and of the market risk premium. The systematic (or undiversifiable) risk of a company is represented by what is called the Beta coefficient, a statistical measure expressing the co-variability between the returns on a given stock and the returns on a stock market index. By the time of Mr. Sacks’ fourth expert report, significant differences between him and Mr. Flores had arisen about the proper methodology by which to determine the components of the discount rate.
564. One of the points of significant disagreement between Mr. Sacks and Mr. Flores was whether and, if so, how to apply a discount for country risk. Mr. Sacks says that, “to calculate the discount rate, I account for India’s country risk by using data entirely from India—Indian stocks prices, Indian

⁶⁹⁷ Sacks II ¶ 226.

⁶⁹⁸ Flores I ¶¶ 320-322.

⁶⁹⁹ Sacks II ¶ 228.

⁷⁰⁰ Flores III, Table 2.

⁷⁰¹ Sacks IV ¶ 121.

⁷⁰² Sacks IV ¶ 122.

telecom companies, Indian risk measures and correlations, Indian inflation, and Indian interest rates—and not ‘fudge factors’.”⁷⁰³ The latter reference is taken from a warning by the authors of a learned study on evaluation, one that Mr. Sacks calls the “leading textbook on corporate finance.”⁷⁰⁴ In their work, *Principles of Corporate Finance*, Professors Brealey, Myers, and Allen, admonish valuers not to give in to the temptation to add “fudge factors to the discount rate to offset things that could go wrong with the proposed investment. Adjust cash-flow forecasts first.”⁷⁰⁵ With respect to country risk premiums, these authors, “warn against adding fudge factors to discount rates for projects in developing economies. Such fudge factors are too often seen in practice.”⁷⁰⁶

565. Mr. Sacks’ position is that the discount rate derived from Indian data is materially higher than the discount rate observed for US wireless companies because it “includes the systemic risks present in India but not the United States, as applicable for telecom companies.”⁷⁰⁷ He concludes that adding any additional “risk premiums” to the model would be improper because, in his view, it would result in a form of “double counting,” *i.e.* the same risk factors being applied twice to the cash flows.
566. In this discussion, the Tribunal’s objective, as previously stated, is to weigh qualitatively the potential appropriateness of relying on various elements highlighted in these strongly differing opinions. Broadly speaking, the Tribunal is persuaded that the Brattle approach to DCF valuation is appropriate and fairly reflects well-accepted valuation principles and standards. The Tribunal accepts the suitability of the DCF valuation approach in the circumstances of this case and determines that it may rely upon this approach even for valuing Devas as of February 2011.
567. The Tribunal has, however, certain reservations about some of the positions taken by Mr. Sacks and Mr. Bazelon within their VC-inspired model. These reservations do not mean that the DCF method for valuing Devas should be rejected. On the contrary, the Tribunal’s view, as stated above, is that this method may be relied upon. However, in the view of the Tribunal, it is necessary to consider certain modifications to the conclusions of Mr. Sacks and Mr. Bazelon.
568. With respect to Mr. Sacks’ assumption of a terminal growth rate of 4.5% for years ten and onwards, the Tribunal appreciates that a valuator must apply judgement to such projections. In

⁷⁰³ Sacks II ¶ 73.

⁷⁰⁴ Sacks II ¶ 65.

⁷⁰⁵ Ex. **BR-2**: Brealey, Myers, and Allen, *Principles of Corporate Finance*, 10th Ed., p 222.

⁷⁰⁶ Ex. **BR-2**: Brealey, Myers, and Allen, *Principles of Corporate Finance*, 10th Ed., p. 227.

⁷⁰⁷ Sacks I ¶ 74.

addition, the Tribunal understands Mr. Sacks' effort to tie this projection to the anticipated growth in Indian GDP. That being said, the Tribunal is wary of the geometrical progression of some fourteen years of unmitigated growth compounded between year ten and year 24. There is no doubt that the opportunity facing Devas in February 2011 was a very significant one. And, of course, the probability of Devas' success or failure is something to be separately assessed. Nevertheless, the Tribunal is uneasy with the relentless application of a terminal growth rate of 4.5% to Devas' projected revenues after year ten. It would prefer to modify this figure by as much as, say 0.5%, down to a 4.0% growth rate simply on general principles of being cautious about such a longer term prediction of future events that were basically unknowable at the time of valuation.

569. On a common sense basis, in fact, the Tribunal presumes that Devas' growth rate over that fourteen year period may have logically been expected to be higher than these rates at the earlier stages of its existence and somewhat lower by the end of this interval. The Tribunal's impression is that in high tech industries, over time, even though demand for such services may continue to grow, results for participants may tend to level off as competition intensifies. In any event, the Tribunal remains uncomfortable with Mr. Sacks' assumption of long term unvarying real growth. The Tribunal therefore finds that there is some room for doubt about the constant application of the 4.5% growth rate as Mr. Sacks has done in this case.
570. It is evident that in the VC Method of valuation, the valuator's analysis of the probability of success or failure is a very significant factor that may greatly influence the ultimate outcome of the valuation. In addition to factoring in the burdens of the Build-Out requirement and a relatively expensive Re-Use Fee and additionally projecting no value for Devas at the end of the second 12 year term, as we have earlier noted, Mr. Sacks makes a 39% PRA or pre-revenue adjustment to the projected cash flows in his model. The Tribunal accepts that Mr. Sacks followed accepted practice, even best practice, in making such an adjustment to cash flow as opposed to attempting to make any additional adjustment to the discount rate itself. The Tribunal resists, however, fully accepting Mr. Sacks' opinion on the amount of pre-revenue adjustment he makes.
571. Mr. Flores challenges Mr. Sacks' opinion on the probability of success for Devas and how to apply it. Citing Business Employment Dynamics data from the U.S. Bureau of Labor Statistics ("BLS"), he claims Mr. Sacks' 39% failure rate is very low compared with established firms.⁷⁰⁸ In defence of his position, Mr. Sacks, among other things, points out that he takes into account

⁷⁰⁸ Flores I ¶ 144.

that by February 2011, Devas had existed for six years.⁷⁰⁹ In footnote 126 in his Second Report, Mr. Sacks says, “Mr. Viswanathan became the CEO of Devas in January 2005.”⁷¹⁰ Therefore, based on the date of first employment, Devas was six years old as of February 2011.” Mr. Sacks asserts that in every industry, establishments exhibit declining annual failure rates as they age. Thus, the presumed age of Devas for purposes of possibly placing it properly in the context of the Bureau of Labor Statistics referred to by Mr. Flores has significance. In the opinion of the Tribunal, in terms of actual operational existence, it would seem more accurate to treat Devas as, say, a four year old company rather than a six year old company. No doubt, Mr. Viswanathan was employed as early as the beginning of 2005, but the real business of operating as a company seems only to have occurred quite gradually over the next couple of years. The Tribunal accepts Mr. Sacks’ view that, “[o]nly the difference between the heightened start-up risk and the mature risk should be adjusted for.”⁷¹¹ Even so, the Tribunal has some reservation as to Mr. Sacks’ evaluation of the risks of success or failure of Devas as at the date of valuation.

572. As briefly described earlier, Mr. Sacks concludes that by February 2011, Devas was “somewhere between a late ‘early stage’ company and early ‘late stage’ company.”⁷¹² The Tribunal generally agrees with that characterization and accepts that Mr. Sacks has fairly acknowledged Devas’ achievement of specific milestones and four rounds of financing, including funding from an important strategic partner. However, the Tribunal views those accomplishments in the context that real, practical operational activity had not yet begun. True, the experimental licenses had been obtained and operated and the ISP license had also been obtained, but the WPC licence had not yet been issued and no on-the-ground activity had as yet taken place. The Tribunal does not agree with Mr. Flores that Devas was, by February 2011, still “just an idea.”⁷¹³ It was more than that, but likely not quite as far advanced as Mr. Sacks considered it to be.

573. The Tribunal acknowledges the difficulty a valuator has in determining a success/failure probability: available statistics are sample dependent, vary from one industry to the next and show that the probability of success is often not stable, but increases over time for survivors. Ideally, the PRA should be made time-dependent, but the Tribunal must content itself with a single probability to be applied to the entire series of projected cash-flows; this probability should be representative of the average probability of success/failure of Devas given the stage at which it

⁷⁰⁹ Sacks II ¶¶ 135, 143.

⁷¹⁰ Viswanathan I ¶ 12.

⁷¹¹ Sacks II ¶ 146.

⁷¹² Sacks I ¶ 51; Sacks II ¶ 156.

⁷¹³ Flores I ¶ 140.

found itself in February 2011. The Tribunal accepts that Devas was still at the pre-revenue stage of its existence. It had tremendous prospects, but it was a young and somewhat untried company. Its earlier successes at raising capital and attracting a major strategic partner should not obscure the fact that it also faced significant technical, regulatory and commercial challenges as of February 2011. Accordingly, the Tribunal remains uneasy with a 61% probability of success (the converse of Mr. Sacks' estimate of the probability of failure). That figure seems somewhat optimistic in the full circumstances prevailing at the time. At the same time, the Tribunal is not comfortable with the classification of Devas as an early-stage start-up. The Tribunal agrees with Mr. Sacks' opinion that by the Valuation date in February 2011, Devas was somewhere between a late "early stage" company and an early "late stage" company.⁷¹⁴ Relying on Professor Gompers' study, Mr. Sacks observes, "[u]sing VentureSource data, the failure rate for late-stage firms is 39% while for early-stage firms, it is 49%."⁷¹⁵ Logically, and having regard for these ranges, the Tribunal finds that an intermediate probability of success of around 58% (failure rate of about 42%) seems more appropriate than Mr. Sacks' opinion of 61% probability of success (failure rate of 39%).

574. The Tribunal next considers the question of whether it is good valuation practice to discount some or all of the negative cash flows occurring in the early years of Devas' development. In his written reports⁷¹⁶ and during his testimony at the Hearing on Quantum, Mr. Flores argued that negative cash-flows should not be adjusted for the probability of success or failure because, regardless of its success or failure, Devas would have made these early expenditures in order to determine whether or not it was worth continuing the business. In other words, until Devas had a "proven product" and was actually selling services to urban customers, the negative cash flows should not have been probability-adjusted.
575. The Claimants' expert disagreed. Mr. Sacks stated, "[a]lthough this criticism may be correct in principle in other situations, it is inapplicable to Devas."⁷¹⁷ He offered two reasons for this position. First, he asserted that Devas had access to interest-free vendor financing due to DT's help and that negative cash flows in that setting represented the accumulation of accounts payable that would only be payable if in fact Devas was successful. In other words, the needed cash would come from lenders and would not be repaid if Devas failed. The second explanation for Mr. Sacks'

⁷¹⁴ Sacks I ¶ 51.

⁷¹⁵ Sacks I ¶ 50 and Ex. **BR-6**: Paul Gompers, William Gornall, Steven N. Kaplan, and Ilya A. Strebulaev, "How do Venture Capitalists Make Decisions?," *National Bureau of Economic Research Working Paper*, 2016 Gompers et al. (2016), Table 23.

⁷¹⁶ Flores I ¶¶ 150-155.

⁷¹⁷ Sacks II ¶¶ 131-134.

position is that most of the negative cash flow in the early years was attributable to the projected long-term Terrestrial Re-Use Fee payments.⁷¹⁸ The Tribunal is inclined to accept Mr. Flores' view that expenditures that were 100% certain to be made should not be probability-adjusted. The Tribunal also has difficulty with Mr. Sacks' explanations for his position. It appears that Mr. Sacks' computations are based on a DCF approach whereby future cash-flows are not apportioned between equity holders and lenders, but rather considered in their entirety. In other words, negative cash-flows are not split into negative cash-flows financed by lenders and negative cash-flows financed by equity holders, nor are positive cash-flows split into cash-flows to lenders and cash-flows to equity holders. All the cash-flows are "to the firm," irrespective of financing sources. Internal consistency requires that this same approach be maintained and that who ends up paying for what should not play a role in the attribution of a probability to a given cash-flow. Second, the idea that lenders (or vendors) would be potentially left with losses in case of default does not seem to bear on value. It seems much more probable that if Devas had indeed decided to borrow some time after February 2011, its lenders would have adjusted their lending conditions to reflect possible default.

576. However, the Tribunal disagrees with Mr. Flores on the length of time during which Devas would not have had any other choice than spending money. During the Hearing on Quantum,⁷¹⁹ he stated that, because there would have been major capital expenditures at least over seven years, these seven years of negative cash-flows should not have been probability-adjusted. The Tribunal does not accept this view. In the Tribunal's opinion, it is most likely that Devas would not have felt under any obligation to go on spending if evidence had emerged that it could not expect to succeed. The Tribunal finds that the first two years or so would have given Devas sufficient information on which to decide whether to fold or not. Thus, the Tribunal finds that it would be inappropriate to make probability adjustments on the first two years of negative cash flows, but it would be appropriate to make probability adjustments on the negative cash flows thereafter.

577. In relation to the discount rate to be applied to the adjusted projected cash flows, the Tribunal notes that Mr. Sacks determined his discount rate by calculating Devas' weighted average cost of capital (WACC). As Mr. Sacks stated, "[t]he WACC is equal to the weighted average of the after-tax cost of debt (i.e., the interest rate on debt), and the cost of equity (i.e., the expected return on equity)." He assumed that Devas would take on debt in the future, which would allow it to benefit from the tax deductibility of interest and, therefore, lower the overall cost of capital. In order to estimate the WACC, Mr. Sacks, in his first report, endeavoured to compute the levered cost of

⁷¹⁸ Sacks II ¶ 133.

⁷¹⁹ Hearing Transcript, Day 5, pp 1395:16-1397:5.

equity (it increases when the proportion of debt in the capital structure increases) and the cost of debt. For this purpose, he assumed a target debt ratio, un-levered the average Beta of existing companies of the relevant industry, re-levered the unlevered Beta according to the target debt ratio and, finally, estimated the cost of debt for that target debt ratio in India. The Respondent's expert, Mr. Flores, objected to this recourse to a weighted average cost of capital. Because Devas was not expected to become taxable before 2019 or later; the debt tax shield advantage would not exist for a long time. Another objection was that Mr. Sacks assumed that Devas would be able to borrow at the same rate as established companies in the sector. Even though, as Mr. Sacks answered, business losses might ultimately be used to offset future taxable profits, the Tribunal finds that the present value of this tax advantage was very low and uncertain in 2011. Further, the Tribunal is not persuaded by the assumption of a specific debt ratio and a specific cost of debt since, as of February 2011, Devas' financing strategy remained rather vague. With these considerations in mind, the Tribunal would prefer, as the proper discount rate, an unlevered cost of equity rather than a WACC based rate. The ingredients of the cost of equity (such as an unlevered Beta, the risk-free rate and the equity risk-premium) were provided by both sets of experts, albeit with some disagreements.

578. The Tribunal has some reservation in relation to the manner in which Mr. Sacks treats country risk. His opinion is that he has fully accounted for country risk by using all-Indian data including Indian stock prices, Indian risk measures and correlations, Indian inflation and Indian interest rates, among other items. While that approach is completely persuasive in relation to what it deals with, the Tribunal is not satisfied that it fully accounts for country risk for a foreign investor. It seems to imply, for example, that there would be no risk of being forbidden to repatriate dividends or profits and that there would be no currency risks associated with such actions. In the Tribunal's opinion, these considerations alone should have encouraged Mr. Sacks to look beyond the all-Indian data on which he relied. If Devas was considered to be only a domestic firm, then Mr. Sacks' approach would be quite acceptable. But, obviously, it was not simply a domestic firm. It was a foreign investor and was accordingly subject to a certain degree of vulnerability to conditions that might uniquely affect such an investor.
579. Nevertheless, the Tribunal notes that, despite rejecting the idea of a country-risk premium, Mr. Sacks appears to have included one in his computations. According to the CAPM, the base rate included in the discount rate should be a "risk-free" rate, meaning a rate applicable to a first-class issuer certain not to default. The Tribunal understands that normal practice for determining a risk free rate is to use the current rate on a long-term bond rated at least AAA. In the United States, the Tribunal understands analysts would commonly choose a Federal Treasury bond for this purpose. In this case, Mr. Sacks chose the rate on a 14-year Indian Government bond rated Baa3,

which is a far cry from a bond rated AAA. This is emphasized in a document by Professor Damodaran produced by the Respondent in which one can read on page 23 that “As table 2 shows, India’s local currency rating of Baa3 suggests that there is default risk in the Indian rupee bond, and that some of the observed interest rate can be attributed to this risk.”⁷²⁰ The Tribunal understands that it is current practice in the international bond market to consider that some governmental issuers do deserve a country-risk “penalty,” that is a rate higher than the rate on a U.S. Treasury bond. The Tribunal concludes that Mr. Sacks’ risk-free rate is in fact comprised of a true risk-free rate and of a country-risk premium. Therefore, no additional adjustment for a country-risk premium seems warranted, although it is understood that the country-risk premium would usually be included with the risk premium rather than with the risk-free rate when valuing equity. For these reasons, the Tribunal concludes that the rate on a 30-year Indian Government bond, equal to 8.56%,⁷²¹ must be considered as including both the risk-free nominal rate and the country-risk premium for India. Thus no further adjustment for country risk is required in relation to Mr. Sacks’ opinion.

580. Regarding the systematic risk measure, the Beta co-efficient, the Tribunal notes that both Parties agree on the appropriate value for an established publicly traded company of that industry, namely 0.67-0.68.⁷²² Mr. Flores, argues that as a non-publicly traded start-up, Devas had a higher Beta due to risks that would have been diversifiable for an established company but were not diversifiable for Devas at the time, such as regulatory risk and technical risk.⁷²³ Without choosing expressly a particular “total Beta” inclusive of these start-up risks, Dr. Flores alludes to a Beta of more than 2 corresponding to the situation in which none of the risks faced by Devas would be diversifiable.⁷²⁴ Mr. Sacks, for his part, while maintaining that Devas’ Beta should be equivalent to the Beta of an established company, nevertheless decided, in order to obtain a conservative value, not to rely on the average Beta of 0.68 that he had computed, but rather averaged the 2 highest Betas he had observed in the industry, resulting in a Beta of 0.99.⁷²⁵ Given the progress made by Devas between 2005 and 2011, the Tribunal would not be prepared to endorse the maximum Beta of 2 as a fair representation of Devas’ risk in February 2011. A more moderate assessment would be preferred. Having chosen a “conservative Beta,” Mr. Sacks argues that no

⁷²⁰ Ex. App. **EO-51**, Aswath Damodaran, “What is the riskfree rate? A Search for the Basic Building Block,” Stern School of Business, New York University, December 2008, p.23

⁷²¹ Flores I ¶ 238.

⁷²² Flores I ¶ 171; Sacks I ¶ 112.

⁷²³ Flores I ¶¶ 247-257, in particular ¶ 252; Flores’ Final Presentation at Hearing on Quantum, slides 19-26.

⁷²⁴ Flores I ¶ 254.

⁷²⁵ Sacks I ¶ 111.

further upward adjustment of Beta is needed because the risk of failure is already taken into account with the PRA. The Tribunal observes that the risk of failure was not the only risk Devas was facing in 2011; it was also facing uncertainty regarding regulatory decisions and technical developments that might affect its profitability; there were also commercial uncertainties regarding, for example, the speed of acceptance of the new service. However, the Tribunal acknowledges that, even if Devas was facing some particular regulatory and technical risks in February 2011, most of these risks would have dissipated over time, conditional on its survival, of course. It seems likely that, if Devas had survived, at the time of first renewal of its lease it would have faced about the same risk as publicly transacted and established companies in the industry. As a consequence, the Tribunal determines that it would be reasonable to consider a Beta moving from about 1.2 in February 2011 to 0.67 towards the end of the first lease. These Betas, according to the CAPM, must be multiplied by the market equity risk-premium (“ERP”), established by Mr. Flores as equal to 6.7%⁷²⁶ and by Mr. Sacks at approximately 7.75%.⁷²⁷ The Tribunal concludes that it would be reasonable to work from a middle estimate, namely 7%.

581. In Mr. Flores’ opinion, a premium for lack of liquidity should be added to the usual risk-premium. Mr. Flores says, “Prof. Damodaran also acknowledges that an illiquidity discount is appropriate for private firms. He points out that, ‘private businesses will generally have much higher costs of equity than their publicly traded counterparts, with diversified investors’ and advocates for an adjustment for liquidity in his paper on valuing young start-ups.” (internal footnotes omitted).⁷²⁸ Further relying on Professor Damodaran, Mr. Flores asserts that Professor Damodaran’s “paper, suggests applying a 22.55% to 27.00% discount to the final NPV value or a 2% increase in the discount rate.”⁷²⁹ Mr. Sacks rejects the need for an illiquidity premium on several bases, including the fact that a potential buyer would not suffer from a lack of reliable information given all the documents produced by Devas and DT. In addition, he quotes several academic research papers that have refuted the research papers quoted by Mr. Flores.⁷³⁰ Faced with these conflicting opinions, the Tribunal would cautiously consider an illiquidity premium of no more than 2% in the first years following February 2011. The Tribunal expects, however, that any illiquidity should have disappeared completely over time as new investors became interested in Devas and Devas eventually became publicly traded.

⁷²⁶ Flores I ¶ 176.

⁷²⁷ Sacks I ¶ 84.

⁷²⁸ Flores II ¶ 416.

⁷²⁹ Flores II ¶ 417.

⁷³⁰ Sacks II ¶¶ 164-175.

582. Recognizing that the risk profile of start-ups evolves through time in a more striking fashion than the risk profile of an established company, the Tribunal is persuaded that focusing on a single discount rate is not the best way to value Devas. It has therefore chosen to consider a higher cost of equity that would be applicable to the first years of the period considered, and a lower cost of equity applicable to the later, more established and stable period. The discount rate to be applied should lie between these two differing scenarios. The highest nominal cost of equity considered by the Tribunal is equal to 19% ($8.56\% + 1.2 \times 7\% + 2\%$), or 15% in real terms (after subtracting the 4% Indian rate of inflation). The lowest one is equal to 13.25% ($8.56\% + 0.67 \times 7\%$) or 9.25% in real terms. In the end, the real discount rate chosen by the Tribunal is equal to about 11%, taking into account that the lowest rate would apply for a longer period than the highest one which, in any case, would decrease gradually towards the lowest one.
583. With these observations and determinations in mind, the Tribunal has asked itself whether there is some sort of reasonableness information by which to further weigh and potentially test the opinions of the experts in this case. The Tribunal is well aware, for example, of the opinion of the tribunal in the ICC Arbitration that valued Devas at USD 562.5 million as of February 17, 2011.⁷³¹ The Tribunal is likewise aware of the contents of the expert report prepared by Mr. Kaczmarek in support of the claims made by Devas in that ICC Arbitration.⁷³² Through the debate over whether the Darwin Model was prepared on a real or nominal basis, the Tribunal also became aware of the expert report of Mr. Harman, FTI Consulting, dated 4 May 2018.⁷³³
584. In his DCF valuation of Devas, Mr. Kaczmarek concluded that as at the valuation date, Devas had an “enterprise value” of USD 1,641,679,000.⁷³⁴ He slightly modified this figure after further looking at what he considered comparable publicly traded companies and comparable transactions.⁷³⁵ His final, adjusted opinion of value was set at USD 1,607 million.⁷³⁶ The tribunal in that case did not agree. Taking into account the “implied value” of Devas based on the DT

⁷³¹ Ex. **C-258**, ICC Award ¶ 386.

⁷³² Ex. App. **EO-194**, Expert Report of Brent C. Kaczmarek, CFA, dated 20 February 2012 (Appendix to Flores II).

⁷³³ Ex. **R-207**, Expert Report of Greg Harman, FTI Consulting, 4 May 2018.

⁷³⁴ Ex. App. **EO-194**, Expert Report of Brent C. Kaczmarek, CFA, dated 20 February 2012 (Appendix to Flores II) ¶¶ 191, 225.

⁷³⁵ Ex. App. **EO-194**, Expert Report of Brent C. Kaczmarek, CFA, dated 20 February 2012 (Appendix to Flores II) ¶¶ 192-211.

⁷³⁶ Ex. App. **EO-194**, Expert Report of Brent C. Kaczmarek, CFA, dated 20 February 2012 (Appendix to Flores II) ¶ 225.

transaction in March 2008, the tribunal in the ICC Arbitration concluded ultimately that by February 2011, Devas had a value of USD 562.5 million.⁷³⁷

585. Mr. Harman, who appeared as an expert for Deutsche Telekom in support of its investor-state claim against India in the DT Arbitration, adopted the DCF methodology as his “primary approach to calculating DT’s damages at the Valuation Date.”⁷³⁸ Based on his DCF analysis, Mr. Harman concluded, “Devas’ expected value was USD 1,618m at the Valuation Date based on the three equally weighted terrestrial re-use licence fee scenarios I have modelled.”⁷³⁹
586. In his report, Mr. Harman pursued further analysis of the DT transaction and the apparent reasoning of the tribunal in the ICC Arbitration. In this analysis, which he calls the “Investment Plus” approach, Mr. Harman develops his opinion of the value of Devas based on his perception that the ICC Tribunal drew its conclusion as if the implied value of the 2008 DT transaction was a fair market value (“FMV”).⁷⁴⁰ Mr. Harman says that he adopts the ICC Tribunal’s general approach, but makes FMV adjustments. He bases these adjustments on DT’s in-kind contribution and on DT’s negotiating power in relation to Devas.⁷⁴¹ In addition, he takes into account specific risks associated with Devas as well as a minority discount. In his opinion, on this analysis, the FMV of Devas in 2008 was USD 966 million. He brings that value forward to 2011 by increasing, as the ICC Tribunal did, his valuation by 50% and accounting for the lowering of risk up to the Valuation Date. As stated in his opinion, “[t]his gives a FMV of Devas of USD 1,449m at the Valuation Date.”⁷⁴²
587. The Tribunal is mindful that it should be particularly cautious about relying on either the conclusions of the tribunal in the ICC Arbitration or Mr. Kaczmarek’s opinion or Mr. Harman’s opinion, especially since neither of these experts has been a witness in this arbitration. Nonetheless, it must be noted that the order of magnitude of their opinions about the value of Devas is at least in the range of the value placed on Devas by Mr. Sacks and Mr. Bazelon.
588. When the Tribunal takes into account the conclusion reached in the ICC Arbitration as well as the opinions of Mr. Kaczmarek and Mr. Harman, it observes that there is a fairly wide range of opinions concerning the value of Devas either in 2008 or 2011. At the same time, however, what

⁷³⁷ Ex. C-258, ICC Award ¶ 386.

⁷³⁸ Ex. R-207, Expert Report of Greg Harman, FTI Consulting, 4 May 2018 ¶ 5.1.

⁷³⁹ Ex. R-207, Expert Report of Greg Harman, FTI Consulting, 4 May 2018 ¶ 5.71.

⁷⁴⁰ Ex. R-207, Expert Report of Greg Harman, FTI Consulting, 4 May 2018 ¶ 6.3.

⁷⁴¹ Ex. R-207, Expert Report of Greg Harman, FTI Consulting, 4 May 2018 ¶¶ 6.6-6.16.

⁷⁴² Ex. R-207, Expert Report of Greg Harman, FTI Consulting, 4 May 2018 ¶¶ 6.17, 6.19.

is common to these approaches is that they all conclude that Devas was much more valuable in 2011 than it was in 2008. Mr. Sacks in this case along with Mr. Harman in the DT Arbitration and Mr. Kaczmarek in the ICC Arbitration all perceived that in relation to the 2008 DT transaction, Devas was worth a great deal more than the simplistic “implied value” of USD 375 million. The Tribunal generally agrees with those views. It does seem highly likely that the DT transaction resulted in Devas’ value being well beyond the arithmetic calculation of a 20% interest for USD 75 million. In other words, as a result of the DT transaction, much more than USD 75 million was added to Devas’ value in March 2008.

589. The Tribunal is of the view that the sum of USD 75 million invested in Devas by DT Asia in 2008 and 2009 for a 20% minority interest in Devas does not represent the real value of Devas at that time. One should add to this amount the value of the important technical and commercial contributions brought to Devas by DT as described above.
590. First, it is interesting to note that DT’s two internal valuations of Devas in 2008 and 2009 (which were not shared with Devas and do not appear to have been part of the evidence submitted to the ICC tribunal) arrived at much higher figures than the total value of USD 375 million mentioned in the 2008 agreement between DT Asia and Devas. These reports were produced by Mr. Axel Scheuermann, Head of Corporate Finance within Mergers and Acquisitions at DT. The first valuation of Devas in February 2008 concluded an enterprise value at USD 1.78 billion.⁷⁴³ In a second valuation carried in June 2009, Mr. Scheuermann concluded that, in the context of the economic crisis at the time, a number of adjustments of the previous valuation should be made and that Devas’ enterprise value should be reduced to USD 1.15 billion.⁷⁴⁴
591. In 2008, DT was in a particularly strong position of leverage and power which would not apply to the situation of a willing buyer and willing seller (no compulsion to sell or buy). Devas in 2008 was in situation where it needed a substantial injection of cash to meet its obligations under the Devas Agreement and wished to avoid the potential delays and risks involved in a lack of financial liquidity.
592. In addition, when DT made its investment in Devas, it was fully aware that Devas, a small enterprise, needed a major partner to ease its development. Devas was short not only of technical expertise and research capability, but also of negotiating power with suppliers and access to international markets. DT being a major player worldwide in the field of telecommunications was

⁷⁴³ Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶ 36.

⁷⁴⁴ Ex. **R-206**, Witness Statement of Mr. Axel Scheuermann, dated April 30, 2018 ¶ 55.

in a strong position to extract from Devas a relatively low share purchase price. For Devas, DT's expertise in the telecommunications which it could call upon and its strong negotiating power with international suppliers had very significant value. The Tribunal received clear evidence to that effect from the history of the negotiations between DT and Devas.

593. Mr. Larsen, in his witness statement, stated that he "led a worldwide team of DT senior engineering experts to further develop Devas's network roll out plan."⁷⁴⁵ He added that over approximately twelve months, around 20-25 DT senior engineers and other procurement specialists worked with him and Devas personnel to plan and implement Devas' terrestrial network. In addition, in 2010, one of these specialists was stationed permanently in Devas' office in Bangalore to build, lead and train a terrestrial radio access network planning and deployment team in India.⁷⁴⁶
594. Moreover, because of DT's strong purchasing power and its extensive relationship with telecommunications industry suppliers, "Devas's Telecom infrastructure costs would have been substantially lower than those of incumbents in the market at like-for-like benchmarks."⁷⁴⁷ Mr. Larsen was of the view that "Devas would likely have benefited from an advantage on telecom unit pricing of at least 50%."⁷⁴⁸
595. Mr. Larsen's statements on the above issues were unchallenged.
596. It is clear to the Tribunal that DT's contribution in-kind (technical support, international network and purchasing power) added a significant value to Devas which was not represented in the USD 375 million value arrived at between DT Asia and Devas in 2008.
597. A willing buyer of the Claimants' shares in 2011 would certainly have factored this contribution into the price he would have been willing to pay.
598. In the Tribunal's opinion, a fair analysis of the in-kind investments of DT in Devas would have added a significant amount to the cash value paid by DT Asia for its shares in 2008 and 2009. Adding the increased value gained by Devas between 2008 and February 2011 as described in this Award and in the award in the ICC Arbitration as well as the increased value for a willing buyer of the Claimants' shares resulting from the presence of DT as a powerful shareholder would

⁷⁴⁵ Larsen I ¶ 40.

⁷⁴⁶ Larsen I ¶ 41.

⁷⁴⁷ Larsen I ¶ 42.

⁷⁴⁸ Larsen I ¶ 42.

bring the damages to which the Claimants would be entitled at least to the level of those arrived at under the DCF formula retained in this case.

599. When considering the potential weight to be given to the opinions of Mr. Sacks and Mr. Bazelon on their determination of value based on the DCF method, the Tribunal acknowledges that, independently of the DCF method, Mr. Bazelon also provided an opinion of value for Devas based on what he considered to be a suitable comparable derived from the Indian BWA Auction conducted in June 2010. At that time, the Indian government auctioned two 20 MHz blocks of unpaired *spectra* in the 2.3 GHz band in each of the 22 telecom circles in India.⁷⁴⁹ At the heart of Mr. Bazelon's analysis, he states, "[o]nly one bidder—Infotel—obtained a national license footprint made up of one spectrum block in each of the 22 telecom circles. For the 22 licenses, Infotel paid a total \$2.74 billion, or 0.11 \$/MHz-pop. This is the same total amount paid by the other five bidders for the other 22 licenses that collectively also covered all of India."⁷⁵⁰ Based on his analysis of this BWA auction and the resulting licenses, Mr. Bazelon concludes, "[t]he 2.3 GHz Indian BWA auction represents a reasonable comparable for the spectrum allocated to Devas (which it intended to use terrestrially to provide BSA services)."⁷⁵¹
600. Subject to certain adjustments to this comparable, Mr. Bazelon concludes that, "[b]ased on the 2010 Indian spectrum auction results, I calculate the FMV of Devas's BWA segment to be approximately \$1.7 billion."⁷⁵² In Brattle's ultimate opinion of value for Devas in February 2011, Mr. Sacks averages his DCF determination of value with that of Mr. Bazelon's market comparable approach. Observing that his Income Approach and the Market Approach of Mr. Bazelon yielded values for the BWA segment that were "reasonably close," Mr. Sacks accepted the average of those two results to arrive at a value for Devas's BWA business. This opinion, set out in Table 21 of Mr. Sacks' First Report, shows a value of USD 1,375 million based on the Income Approach and a value of 1,705 million based on the Market Approach. The average of the two is USD 1,540 million.⁷⁵³
601. The Respondent took issue with Brattle's Market Approach primarily on the basis that, "[i]t assumed that Devas had the right to use the satellite spectrum terrestrially at an annual fee based on what the Slovenian regulators would have charged that would have given Devas a huge

⁷⁴⁹ Ex. **BR-107**: Government of India, Department of Telecommunications, BWA Auctions: Final Results (internal footnotes omitted); Bazelon I ¶ 135.

⁷⁵⁰ Bazelon I ¶ 137.

⁷⁵¹ Bazelon I ¶ 139.

⁷⁵² Bazelon I ¶ 151.

⁷⁵³ Sacks I ¶ 142.

advantage over its competitors, rather than at the upfront spectrum fee commensurate with the price paid by those competitors at the 2010 BWA Auction.”⁷⁵⁴ The Tribunal concludes elsewhere that it does not agree with the Respondent’s submission that India would have acted contrary to the general policy of fully exploiting the valuable S-band spectrum or that India would have charged rates in the same order of magnitude as the prices paid for the BWA auction in 2010.

602. Nevertheless, the Tribunal has determined that it cannot accept Mr. Bazelon’s opinion that the prices paid for BWA spectrum in June 2010 represented a reasonable comparable for the value of Devas’ spectrum under the Devas Agreement. Even with Mr. Bazelon’s adjustments, the Tribunal is not persuaded that the cumulative auction price of some 22 segments of BWA access reasonably equates to the value of the S-band spectrum held by Devas under its agreement. It is true that cumulatively, these 22 segments gave Infotel national coverage which, without more, might be said to be geographically equivalent to the S-band spectrum to which Devas was entitled. The Tribunal doubts, however, the quality of the comparison between these two types of businesses. The potential exploitation of the S-band spectrum was going to be a significantly different model from the business and technical model being created by Infotel. For example, the total spectrum available to Devas in the S-band was approximately one and a half times larger than the total spectrum acquired by Infotel. In addition, Infotel was not going to operate an AV system. These differences alone are significant indicators that direct comparisons between the two types of businesses should likely be avoided.
603. Even if the Tribunal’s doubts on the comparability of the BWA access acquired by Infotel and the S-band access to which Devas was entitled could be otherwise reconciled, the Tribunal does not consider the methodology of averaging the Market Approach with the Income Approach to be an acceptable methodology. In this instance, such an averaging exercise would putatively add approximately USD 200 million to the value otherwise shown by the Income Approach. The Tribunal finds that arithmetic result to be arbitrary and undependable. The Tribunal concludes, therefore, that for purposes of determining the value of Devas in February 2011, it will rely on the DCF approach, but will not rely on Mr. Bazelon’s market comparable opinion.
604. The Tribunal accordingly returns to the question whether it should accept the opinions of Mr. Sacks and Mr. Bazelon based on their DCF calculation of value? The Tribunal agrees generally with their methodology in relation to the DCF approach and therefore accepts the model relied upon by Mr. Sacks and Mr. Bazelon. At the same time, the Tribunal continues to have certain reservations and concerns as already outlined, above, in relation to some of the inputs relied upon

⁷⁵⁴ Respondent’s Counter-Memorial on Quantum ¶ 67.

by Brattle in its model. Based on these reservations, for the reasons already expressed, the Tribunal has determined that it should modify some of the figures used by these experts in order to arrive at a value for Devas that would better fit with the Tribunal's perception of that company's worth in February 2011.

605. The Tribunal finds that it should modify at least three inputs in the Sacks/Bazelon DCF model, namely the estimated risk of failure on which the PRA is based, the discount rate to be applied to future cash flows and the terminal growth rate for the last 12 years of the Devas Agreement. In lieu of the risk of failure rate and corresponding PRA adjustment of 39%, selected by Mr. Sacks, the Tribunal has concluded that this figure should be adjusted slightly to approximately 42%. In addition, the Tribunal finds that Devas' very first unavoidable expenditures, for a period of about 2 years, should not be probability-adjusted. With respect to the discount rate Mr. Sacks has determined, the Tribunal concludes that it is a little too optimistic to reflect fully the circumstances of Devas in early 2011. Rather than a discount rate of 10.43% (in real terms), the Tribunal concludes the figure should be approximately 11.0%. Finally, in order to account for its concerns in relation to the terminal growth rate, the Tribunal concludes that the figure of 4.5% is too robust and would substitute a figure of 3.5%. These adjustments are significant. They are intended, however, to produce a likely value that more accurately equates with that of Devas at the Valuation Date. The mathematical application of these adjustments to Mr. Sacks' inputs, using the Brattle model, suggests the value of Devas at the Valuation Date was in the range of approximately USD 700 million to USD 775 million, with a mid-range of approximately USD 740 million.
606. Having regard for the evidence in this case and the reservations and concerns the Tribunal has identified, the Tribunal finds that by February 17, 2011, Devas' value was USD 740 million. This conclusion reflects the Tribunal's opinion that there had been a significant increase in the value of Devas after 2008. Devas' successful financings and its achievement of milestones such as acquiring the ISP license and its successful conduct pursuant to its experimental license, when viewed together with the fullness of the significant synergies arising from the strategic engagement of DT in Devas' affairs all contributed to this increased value. The Tribunal has also weighed, however, the concerns it has expressed in this decision. Those concerns have caused the Tribunal to modify the magnitude of Brattle's opinion of Devas' value. Subject to these modifications as described by the Tribunal, the DCF method provides, in the Tribunal's opinion, a reliable indicator of the value of Devas in this case. The Tribunal therefore determines that the value of Devas as of February 17, 2011 was USD 740 million.

607. This being said, the Tribunal wishes to add that, even if it had dismissed the application of the DCF valuation method in this case and had applied an analysis analogous to the one followed by the ICC Tribunal in the ICC Arbitration, it would have arrived at a value that would be no less than the one it established under a DCF valuation.

3. Compensation Due to the Claimants

608. As explained in the previous section, the Tribunal has determined that the value of Devas as of February 17, 2011 was USD 740 million. The Tribunal recalls its decision in the operative paragraph of the Award on Jurisdiction and Merits whereby it held:

By majority, that the protection of essential security interests accounts for 60% of the Respondent's decision to annul the Devas Agreement, and that the compensation owed by the Respondent to the Claimants for the expropriation of their investment shall therefore be limited to 40% of the value of that investment;⁷⁵⁵

609. Pursuant to the Tribunal's above-quoted finding, compensation owed by the Respondent to the Claimants is limited to 40% of the value of their respective investments in Devas as of February 17, 2011.

610. In order to establish the amount of compensation owed by the Respondent to each of the Claimants, the Tribunal multiplies the percentage of the Claimants' respective shareholdings in Devas by USD 740 million, and multiplies that amount by 0.4 (or 40%). The Tribunal recalls in this regard that CC/Devas and Telcom Devas respectively hold 17.06% of the issued share capital of Devas, and DEMPL holds 3.48% of the issued share capital of Devas.⁷⁵⁶

611. Accordingly, CC/Devas and Telcom Devas are each entitled to compensation in an amount of **USD 50,497,600**; and DEMPL is entitled to compensation in an amount of **USD 10,300, 800**.

VII. INTEREST

612. The Tribunal shall finally address the question as to the suitable interest rate and how such interest rate should be applied to the amount of compensation quantified in the preceding section.

⁷⁵⁵ Award on Jurisdiction and Merits ¶ 501(e).

⁷⁵⁶ Statement of Claim ¶ 35.

A. THE CLAIMANTS' POSITION

613. The Claimants seek an award of pre-award interest calculated at LIBOR plus 4% from the valuation date to the date of the Award.⁷⁵⁷
614. The Claimants argue that such a rate that has been commonly used in recent treaty cases and is “the best proxy for the time value of money wrongfully withheld from the Claimants since the Valuation Date.”⁷⁵⁸
615. The Claimants also seek post-award interest at the same rate until the date of full payment.⁷⁵⁹
616. The Claimants dispute the appropriateness of the Respondent’s advocated interest rate (based on six-month or one-year U.S. Treasury rate) by pointing out that “as past Tribunals have noted, “short-term U.S. Treasury bills (...) practically offer no return.”⁷⁶⁰ They rely on the finding by the *Rusoro Mining* tribunal to the effect that “the best approach for establishing ‘a normal commercial rate’ is to select LIBOR plus an appropriate margin (...) [in the] market situation of ultra-low interest rates, (...) a margin of 4% is appropriate.”⁷⁶¹
617. The Claimants also argue that in accordance with Article 38(1) of the ILC Articles and the judgment in the *Chorzów Factory* case, the interest rate must be sufficient to ensure “full reparation” for Claimants’ “injury” which includes the failure by the Respondent to pay interest at commercial market rates as provided by Articles 4 (most favoured nation or “MFN”) and 6 (expropriation) of the Treaty. This injury can only be repaired with the payment of interest at a commercial rate.⁷⁶² Similarly, the Tribunal in the *Murphy* case held that a rate of LIBOR plus 4% was appropriate to restore Claimant to the position it would have enjoyed absent the breach as “the best approximate rate that Claimant would have had to pay if it had been obligated to borrow the money.”⁷⁶³

⁷⁵⁷ Claimants’ Submission on Quantum ¶ 12.

⁷⁵⁸ Claimants’ Submission on Quantum ¶ 12.

⁷⁵⁹ Claimants’ Submission on Quantum ¶ 12.

⁷⁶⁰ Claimants’ Reply on Quantum ¶ 189.

⁷⁶¹ Claimants’ Reply on Quantum ¶ 189, quoting **CL-114**, *Rusoro Mining Ltd. v. Venezuela*, No. ARB(AF)/12/5, Award ¶ 838 (ICSID 2016).

⁷⁶² Claimants’ Reply on Quantum ¶ 193.

⁷⁶³ Claimants’ Reply on Quantum ¶ 194, quoting **CL-112**, *Murphy Exploration & Production Co. International v. Ecuador*, PCA Case No. 2012-16, Partial Final Award ¶ 517 (awarding interest at LIBOR plus 4%).

618. The Claimants ask that the Tribunal's Award be made in US dollars and that it be net of Indian taxes.⁷⁶⁴

B. THE RESPONDENT'S POSITION

619. The Respondent considers that the issue of interest should be moot in this case.⁷⁶⁵ In any event, it considers that the Claimants' argument on interest is unsupported by any rationale, other than the fact that some tribunals have awarded a rate consistent with their choice. However, the Respondent points out that tribunals have also awarded lower rates, which are supported by economic theory to the effect that once a claimant has been expropriated, it has been relieved of the risks of the project and, therefore, a fair and equitable rate would be the risk-free rate, which compensates the claimant for the time value of its money pending payment of what is otherwise a sum certain once determined by the tribunal.⁷⁶⁶
620. In support, the Respondent cites several authorities, including *Vestey v. Venezuela* where the Tribunal recognised the proposition and awarded interest on the basis of the 6-month Treasury bill as it considered that "[t]he function of reparation is to compensate the victim for its actual losses. It is not to reward it for risks which it does not bear."⁷⁶⁷ In that case the Claimants requested a rate of LIBOR plus 2%, but the Tribunal held that

[t]his could indeed be an appropriate rate if the Claimant had to borrow funds because it did not receive the expropriation indemnity on time (...) there is no indication in the record to this effect.⁷⁶⁸

621. The Respondent adds that, in this case, the interest rate requested does not respond to the rate they may have incurred in connection with any borrowings resulting from the lack of payment of compensation but rather on counsel's views as to what would be an appropriate rate on the basis of a few tribunals' decisions.⁷⁶⁹

⁷⁶⁴ Claimants' Submission on Quantum ¶ 13.

⁷⁶⁵ Respondent's Rejoinder on Quantum ¶ 11.

⁷⁶⁶ Respondent's Counter-Memorial on Quantum ¶ 70; Flores I ¶¶ 361-363.

⁷⁶⁷ Respondent's Rejoinder on Quantum ¶ 11; quoting App. EO-131, *Vestey Group Limited v. Bolivarian Republic of Venezuela* (ICSID Case No ARB/06/4), Award, 15 April 2016 ¶¶ 440-441.

⁷⁶⁸ Respondent's Rejoinder on Quantum ¶ 11; quoting App. EO-131, *Vestey Group Limited v. Bolivarian Republic of Venezuela* (ICSID Case No ARB/06/4), Award, 15 April 2016 ¶ 442.

⁷⁶⁹ Respondent's Counter-Memorial on Quantum ¶ 71.

622. The Respondent requests that interest on any award should be calculated at the risk-free rate from February 17, 2011, the date of the expropriation, to the date of the award.⁷⁷⁰ It adds that “while no compensation should be granted in this case, a proper rate of interest would be the six-month or one-year U.S. Treasury rate.”⁷⁷¹

C. THE TRIBUNAL’S ANALYSIS

623. The Parties have summarized the diverging conclusions previously reached by various tribunals concerning the rate of interest which should apply in cases where the respondent is found liable to pay damages and the Tribunal sees no need to expand on the matter.
624. Upon review of the previous arbitral decisions cited by the Parties and their arguments in this regard, the Tribunal concludes that a rate of LIBOR + 2 percentage points is appropriate in the present case.
625. Consequently, the Respondent shall pay to the Claimants interest calculated at the six-month term LIBOR rate for U.S. dollar deposits published by the Wall Street Journal, plus two (2) percentage points, compounded semi-annually, from February 17, 2011 to the date of full payment.
626. In the event that LIBOR is discontinued while any amount remains outstanding under this Award, the Tribunal considers it appropriate to adopt an alternative reference interest rate. The Tribunal accordingly determines that the Secured Overnight Financing Rate (“SOFR”) shall be used to calculate the interest due from the date LIBOR is discontinued. In such case, the rate of SOFR + 2 percentage points shall apply.

VIII. COSTS

627. Finally, the Tribunal shall fix the costs of arbitration and determine the allocation of those costs.

A. COSTS OF ARBITRATION

628. Pursuant to Article 38 of the UNCITRAL Rules, the Tribunal fixes the costs of arbitration as follows.
629. The members of the Tribunal have incurred in the following fees:

⁷⁷⁰ Respondent’s Counter-Memorial on Quantum ¶ 72.

⁷⁷¹ Respondent Rejoinder on Quantum ¶ 128.

- (a) Professor Francisco Orrego Vicuña: EUR 24,000.00
 - (b) The Hon. Marc Lalonde, P.C., O.C., Q.C.: EUR 895,119.00
 - (c) Mr. David Haigh, Q.C.: EUR 572,340.00
 - (d) The Honorable Shri Justice Anil Dev Singh: EUR 430,780.00
630. The fees of Professor Alix Mandron, retained by the Tribunal as expert advisor, amount to EUR 24,487.50.
631. The expenses incurred during the arbitration, including expenses relating to court reporting services, hearing facilities and IT/AV support, travel, accommodation, catering, courier, and telephone charges amount to EUR 275,771.94.
632. The Registry fees of the PCA amount to EUR 288,981.50.
633. Therefore, the total costs of arbitration pursuant to Article 38(a), (b) and (c) of the UNCITRAL Rules amount to a total of EUR 2,511,479.94. During this arbitration, each side paid advances in equal shares to the deposit held by the PCA, resulting in a total deposit of EUR 2,513,776.26.
634. The PCA shall return any remaining amounts on deposit to both sides in equal shares. The amount remaining on deposit is EUR 2,296.32. Thus, the balance to be returned to each side amounts to EUR 1,148.16.

B. ALLOCATION OF COSTS

1. The Claimants' Position

635. The Claimants seek an award of costs incurred in this proceeding, including costs of legal representation, as well as post-award interest thereon at the same rate as requested in relation to other sums (*i.e.* one-year LIBOR plus 4%, compounded annually).⁷⁷²
636. The Claimants submit that their arbitration costs amount to USD 25,233,325.93 incurred as follows during these proceedings: USD 8,958,671.90 for the jurisdiction and merits phase, and

⁷⁷² Claimants' Submission on Fees and Costs ¶¶ 1, 6, 28-29, 31-32. See also Claimants' Comments on Respondent's May 8, 2020 Cost Submission ¶ 5; Claimants' Submission on Quantum ¶¶ 14, 125.

USD 16,274,654.03 for the quantum phase.⁷⁷³ Such amounts include legal fees and costs pursuant to Article 38(e) of the UNCITRAL Rules amounting to USD 19,754,365.43, incurred as follows: USD 7,860,527.45 for the jurisdiction and merits phase, and USD 11,893,837.98 for the quantum phase.⁷⁷⁴ It is the Claimants' submission that their costs are reasonable in amount and "reflect (...) the legal and technical complexity of the case."⁷⁷⁵

637. The Claimants assert that UNCITRAL tribunals hearing investor-State cases have long exercised their authority to award costs in favour of the prevailing party.⁷⁷⁶ The Claimants argue that they prevailed on jurisdiction and that the Tribunal also unanimously found that the Respondent breached its FET obligation and expropriated the Claimants' investments.⁷⁷⁷ Furthermore, the Claimants contend that the Respondent's positions on quantum "are objectively unsustainable, as well as contrary to the specific findings of the Merits Award" and assert that, if the Tribunal awards damages to the Claimants, they should also be regarded as the successful party in the quantum phase.⁷⁷⁸
638. Furthermore, according to the Claimants, recovery of legal expenses caused by a treaty breach is necessary in order to ensure "full reparation" for the injured party, as required by *Chorzów Factory*.⁷⁷⁹
639. The Claimants also affirm that tribunals have held that conduct by a respondent which exacerbates a Treaty breach may further support granting a cost award.⁷⁸⁰ In this regard, they recall the Tribunal's findings in the Merits Award that the Respondent did not pay any compensation

⁷⁷³ Claimants' Submission on Fees and Costs ¶ 1. Further detail concerning their fees and costs is provided by the Claimants in Schedule I to such submission (for the jurisdiction and merits phase) and in Schedule II (for the quantum phase).

⁷⁷⁴ Claimants' Submission on Fees and Costs ¶¶ 4, 23. The Claimants affirm that their claim does not include fees or costs connected with ancillary proceedings related to this arbitration (Claimants' Submission on Fees and Costs ¶ 27). The Claimants do not seek reimbursement for the fees incurred in relation to their Submission on Fees and Costs (see Claimants' Comments on Respondent's May 8, 2020 Cost Submission, footnote 7).

⁷⁷⁵ Claimants' Submission on Fees and Costs ¶¶ 1, 4-5, 24-25, 30; Claimants' Comments on Respondent's May 8, 2020 Cost Submission ¶ 4.

⁷⁷⁶ Claimants' Submission on Quantum ¶ 123.

⁷⁷⁷ Claimants' Submission on Fees and Costs ¶¶ 2, 10. The Claimants acknowledge that the presumption of loser pays does not expressly apply in relation to costs pursuant to Article 38(e) of the UNCITRAL Rules but request that the Tribunal exercises its discretion in their favor, invoking "the extraordinary circumstances of this case, and, in particular, Respondent's bad faith" (see Claimants' Submission on Fees and Costs ¶¶ 8, 13).

⁷⁷⁸ Claimants' Submission on Fees and Costs ¶¶ 2, 11-12.

⁷⁷⁹ Claimants' Submission on Quantum ¶ 123. See also Claimants' Submission on Fees and Costs ¶ 10.

⁷⁸⁰ Claimants' Submission on Quantum ¶ 124. See also Claimants' Submission on Fees and Costs ¶ 13.

whatsoever to the Claimants when expropriating their investment for purposes other than its essential security interests. In the Claimants' view, such conduct evinced a lack of good faith.⁷⁸¹

640. Likewise, the Claimants argue that the Respondent engaged in "serious misconduct" during this arbitration, including through the submission of "deceptive testimony," "disregard for the Tribunal's disclosure orders," "inaccurate description of the redactions it made to documents," "creation of *post-hoc* documents" and the "unnecessary enlargement of the dispute."⁷⁸² Hence, in the Claimants' submission, the Respondent is not entitled to an award of any costs or fees.⁷⁸³

641. Furthermore, the Claimants criticize that the Respondent did not provide any narrative detail of its costs claim, which prevents them from providing any comments on how such amount has been compiled.⁷⁸⁴ In any event, the Claimants consider that the difference in the amount of costs claimed by the Parties is not surprising because the Claimants bear the burden of proof and because a private claimant's legal representation is structured differently from a government's.⁷⁸⁵

2. The Respondent's Position

642. The Respondent affirms that it incurred USD 3,583,465.51 during the jurisdiction and merits phase.⁷⁸⁶ This amount includes USD 2,575,330.75 in attorney and paralegal fees.⁷⁸⁷

643. The Respondent states that it incurred USD 6,128,753.21 during the quantum phase, including USD 3,162,931.25 in attorney and paralegal fees.⁷⁸⁸

⁷⁸¹ Claimants' Submission on Quantum ¶ 124.

⁷⁸² Claimants' Submission on Fees and Costs ¶¶ 3, 14-22. See also Claimants' Comments on Respondent's May 8, 2020 Cost Submission ¶ 1.

⁷⁸³ Claimants' Comments on Respondent's May 8, 2020 Cost Submission ¶ 5.

⁷⁸⁴ Claimants' Comments on Respondent's May 8, 2020 Cost Submission ¶ 2.

⁷⁸⁵ Claimants' Comments on Respondent's May 8, 2020 Cost Submission ¶ 3; Ex. **CL-15**, *Gemplus S.A. v. Mexico; Talsud S.A. v. Mexico*, Nos. ARB(AF)/04/3 & ARB(AF)/04/4, Award ¶¶ 17-25 (ICSID 2010).

⁷⁸⁶ Respondent's Cost Submission, p. 2. Further details on the Respondent's costs during the jurisdiction and merits phase are provided at page 2 of the Respondent's Cost Submission.

⁷⁸⁷ Respondent's Cost Submission, p. 2.

⁷⁸⁸ Respondent's Comments on Claimants' Submission on Costs, footnote 12; Respondent's Cost Submission, p. 2. Further details on the Respondent's costs during the quantum phase are provided at page 2 of the Respondent's Cost Submission.

644. Therefore, the Respondent's total costs in this arbitration amount to USD 9,712,218.72.⁷⁸⁹ According to the Respondent, its costs "are well within the range of reasonableness," as is evidenced by the fact that they are 38% of the overall amount claimed by the Claimants.⁷⁹⁰
645. The Respondent criticizes the Claimants' extensive argument presented in their costs submission despite agreement by counsel of the Parties to follow the format used in the ICC Arbitration, namely, a table with a short cover letter.⁷⁹¹
646. Moreover, the Respondent also criticizes the amount of costs claimed by the Claimants in this arbitration.⁷⁹² The Respondent refers to a study on costs in investment treaty arbitration during the period 2013-2017; noting that the Claimants' costs are more than three times the average and five times the median, the Respondent submits that the Claimants' costs are "indefensible."⁷⁹³
647. The Respondent requests that the costs of this case should be assessed against the Claimants.⁷⁹⁴ In the Respondent's view, if costs are to be allocated regarding the jurisdiction and merits phase of this proceeding, the Claimants should be required to pay 60% of the Respondent's costs incurred during such phase (including legal fees and related costs) in line with the Tribunal's decision to dismiss 60% of their claim on the basis of essential security interests.⁷⁹⁵
648. With regard to the quantum phase, the Respondent considers that the Claimants adopted "wholly indefensible positions," including with regard to the appropriate discount rate and cash flows.⁷⁹⁶ Therefore, the Respondent requests the Tribunal to order the Claimants bear all of the costs incurred in the quantum phase, including the Respondent's legal fees and related costs.⁷⁹⁷

⁷⁸⁹ Respondent's Comments on Claimants' Submission on Costs, footnote 12. See also Respondent's Cost Submission, p. 2.

⁷⁹⁰ Respondent's Comments on Claimants' Submission on Costs ¶ 5 and footnote 11.

⁷⁹¹ Respondent's Comments on Claimants' Submission on Costs ¶¶ 2-3.

⁷⁹² Respondent's Comments on Claimants' Submission on Costs ¶ 5.

⁷⁹³ Respondent's Comments on Claimants' Submission on Costs ¶ 5; **Appendix B**, Global Arbitration Review, *Damages and Costs in Investment Treaty Arbitration*, 14 December 2017; **Appendix C**, Matthew Hodgson and Alastair Campbell, *Study of Cost Awards in Investment Treaty Arbitrations up to 31 May 2017: Master Table* (Allen & Overy LLP 2017).

⁷⁹⁴ Respondent's Cost Submission, p. 1. See also Respondent's Counter-Memorial on Quantum ¶ 73; Respondent's Rejoinder on Quantum ¶ 129.

⁷⁹⁵ Respondent's Comments on Claimants' Submission on Costs ¶¶ 4, 6.

⁷⁹⁶ Respondent's Comments on Claimants' Submission on Costs ¶ 4.

⁷⁹⁷ Respondent's Comments on Claimants' Submission on Costs ¶¶ 4, 6.

3. The Tribunal's Analysis

649. When fixing costs in this case, the Tribunal is required to apply the principles described in Article 40 of the UNCITRAL Rules:

1. Except as provided in paragraph 2, the costs of arbitration shall in principle be borne by the unsuccessful party. However, the arbitral tribunal may apportion each of such costs between the parties if it determines that apportionment is reasonable, taking into account the circumstances of the case.

2. With respect to the costs of legal representation and assistance referred to in article 38, paragraph (e), the arbitral tribunal, taking into account the circumstances of the case, shall be free to determine which party shall bear such costs or may apportion such costs between the parties if it determines that apportionment is reasonable.

650. The guidance provided in this rule includes not only the general principle that costs should follow the event but also a broad discretion for the Tribunal to take into account the circumstances of this case.

651. The Claimant argues that it was the successful party on what it calls the core issues in this arbitration. It says that in the Jurisdiction and Merits Award, the Tribunal unanimously found that the Claimants prevailed in their jurisdictional claim that their investments were protected under the Treaty. Likewise, the Tribunal unanimously found that the Respondent breached its obligation to accord fair and equitable treatment to the Claimants under the Treaty and expropriated the Claimants' investments. The Tribunal accepts these submissions, but must observe that significantly, the Claimants' success was not unmitigated since, by majority, the Tribunal also determined that the protection of essential security interests accounted for 60% of the Respondent's decision to annul the Devas Agreement in 2011. As a result, the Claimants' right to recover damages was reduced to 40% of what was said to have been the quantum to which it was entitled.

652. In the quantum phase of this case, the Claimants have succeeded, by majority, in an award of significant damages, but in an amount that is considerably less than the amount sought. The Tribunal notes, of course, that this award of damages far exceeds the position taken by the Respondent which submitted that there was no loss, arguing that Devas itself had either a huge negative value or, at best, a minimal value in February 2011.

653. The Claimants have also argued that there are other circumstances that the Tribunal should take into account when exercising its discretion in fixing costs. The Tribunal notes two of those, in particular. The first concerns the Respondent's reliance on certain minutes of a December 15, 2009 meeting between ISRO and defence officials. The Respondent submitted a redacted version

of these minutes as Exhibit VA-10, urging that the un-redacted language demonstrated the “needs” of the Indian military as they were said to have crystalized at the time. The Respondent also submitted a privilege log which purported to describe the redacted portions of Exhibit VA-10. The Tribunal relied on this exhibit and the testimony of Mr. A. Vijay Anand, in the Jurisdiction and Merits Award. Subsequently, in 2018, during the quantum phase of this case, an un-redacted version of Exhibit VA-10 became available as a result of its production in the DT Arbitration, another investor-state claim against India in relation to these events. The un-redacted minutes were expressly relied upon in the DT Arbitration case where the tribunal rejected India's defence based on essential security.

654. A second circumstance which the Claimants urge the Tribunal to consider in the exercise of its discretion when fixing costs, arises from certain evidence presented in relation to the licensing issue. This was a document entitled, “Technical Statement”, dated November 24, 2014, and purportedly issued by the DOT Joint Wireless Advisor as a policy statement. In cross-examination, Mr. Anand admitted he had authored the statement so that it could be deployed in arbitration. In the event, the Tribunal did not in fact rely on this document.
655. Under Article 38(e) of the UNCITRAL Rules, where the Tribunal may award costs for legal representation and assistance, there are two further considerations, namely, that the “successful party” claimed such costs during the arbitral proceedings and then, “only to the extent that the arbitral tribunal determines that the amount of such costs is reasonable.” The Tribunal acknowledges that the Claimants have claimed their costs throughout these arbitration proceedings.
656. The total amount claimed by the Claimants for their costs totals USD 25,233,325.93 (USD 8,958,671.90 for the merits and jurisdiction phase and USD 16,274,654.03 for the quantum phase). Within these figures, the total amount claimed for legal fees as contemplated in Article 38(e), is USD 19,754,365.43. The Claimants’ other claimed costs and disbursements total USD 5,478,960.50.
657. By comparison, the Respondent’s total claimed costs were USD 3,583,464.51 for the jurisdiction and merits phase and USD 6,103,273.25 for the quantum phase (both sets of figures including the arbitrators’ fees and expenses and PCA administrative costs) for an overall total of USD 9,686,738.76.
658. The Tribunal is conscious that this dispute led the Parties to incur significant costs and to deploy skilful and experienced legal advisors and valuation experts in order to present their respective positions. Nonetheless, the Tribunal observes that the costs incurred by the Claimants are

exceptionally large and the Tribunal further notes the significant disparity in the overall costs incurred by each of the Parties.

659. The Claimants may rightfully say that without incurring such expense, they would not have been able to obtain the results of this award. In general terms, the Claimants have been successful, even though they were only partially successful on liability. With respect to quantum, the Claimants have succeeded on what was undoubtedly a complex damages case, but again to a lesser extent than claimed. The Respondent can also say that it was required to defend itself against these claims and has to some extent succeeded in its defence. With respect to the exercise of its discretion, the Tribunal is bound to express its grave concern in relation to the redacted document, Exhibit VA-10. International arbitration proceedings such as this depend for their fairness and efficiency on a proper regard for trustworthy conduct and candour by parties and their counsel.
660. Having regard to all the factors described above, including the submissions of the Parties and the full circumstances of this case, and in the exercise of its discretion under the UNCITRAL Rules, the Tribunal fixes the costs in favour of the Claimants, payable by the Respondent, in the total amount of USD 10 million, which amount includes the Claimants' reasonable costs for legal representation and assistance, travel and other expenses incurred by witnesses, costs of expert advice and other assistance.
661. With respect to the fees and expenses of the arbitral tribunal, including travel and other expenses incurred by the arbitrators and the cost of expert advice to the Tribunal, as well as the fees and expenses of the PCA at The Hague for the administration of this arbitration, the Tribunal directs that those costs shall be borne equally between the Parties.
662. With regard to the fees and expenses of the appointing authority pursuant to Article 38(f) of the UNCITRAL Rules, the Tribunal determines that each side shall bear the fees and expenses of the appointing authority which it has expended.

IX. DISPOSITIF

663. **For the reasons set out above, the Tribunal, by majority, decides as follows:**
- (a) **The total value of Devas on February 17, 2011 is USD 740 million.**
 - (b) **Each Claimant is entitled to compensation pursuant to the Award on Jurisdiction and Merits dated July 25, 2016 in an amount corresponding to 40% of USD 740 million, multiplied by the percentage of its shareholding.**

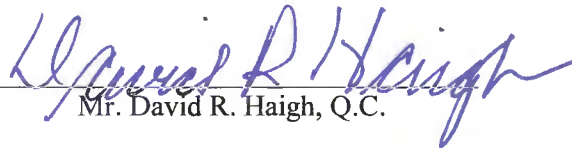
- (c) The Respondent shall accordingly pay compensation to the Claimants in the following amounts:
- CC Devas (holding 17.06% of the issued share capital of Devas): USD 50,497,600;
 - Telecom Devas (holding 17.06% of the issued share capital of Devas): USD 50,497,600; and
 - DEMPL (holding 3.48% of the issued share capital of Devas): USD 10,300,800.
- (d) The Respondent shall pay interest on the amounts stated in paragraph (c) at a rate of the six-month USD LIBOR + 2 percentage points, compounded semi-annually from February 17, 2011 until the date of full payment.
- (e) The Claimants and the Respondent shall share equally the Tribunal's costs and fees pursuant to Article 38(a), (b) and (c) of the UNCITRAL Rules, including the cost of expert advice and the administration of this arbitration by the PCA. Each side shall bear the fees and expenses of the appointing authority that it has expended pursuant to Article 38(f) of the UNCITRAL Rules.
- (f) The Respondent shall pay the Claimants pursuant to Article 38(c), (d), and (e) of the UNCITRAL Rules the amount of USD 10,000,000.
- (g) The Respondent shall pay post-award interest at a rate of the six-month USD LIBOR + 2 percentage points on the amount due pursuant to paragraph (f) compounded semi-annually from the date of this Award until the date of full payment.
- (h) In the event that LIBOR were to be discontinued while any amounts pursuant to paragraphs (c) and (f) remain outstanding, the interest due shall, from that date onward, be calculated on the basis of SOFR + 2 percentage points.
- (i) The Respondent may not withhold or offset payment of any portion of the award based on a claim that such amount is subject to taxation or other deductions.
- (j) The Respondent shall indemnify the Claimants with respect to any Indian taxes, charges, or other set-offs imposed on the compensation awarded.
- (k) Prior to payment of any amounts awarded in paragraphs (c), (d), (f) and (g), the Claimants shall provide an undertaking that they will not seek double recovery in

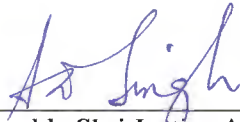
relation to their investment, and will take appropriate steps to ensure that they are not compensated twice in the event that any damages were to be paid by Antrix Corporation Limited to Devas Multimedia Private Limited pursuant to the ICC Award.


- (l) **All other claims are dismissed.**

Place of Arbitration: The Hague, the Netherlands

Date of Award: October 13, 2020


Mr. David R. Haigh, Q.C.


The Honorable Shri Justice Anil Dev Singh
(Subject to the attached dissenting opinion)


The Hon. Marc Lalonde, P.C., O.C., Q.C.
President